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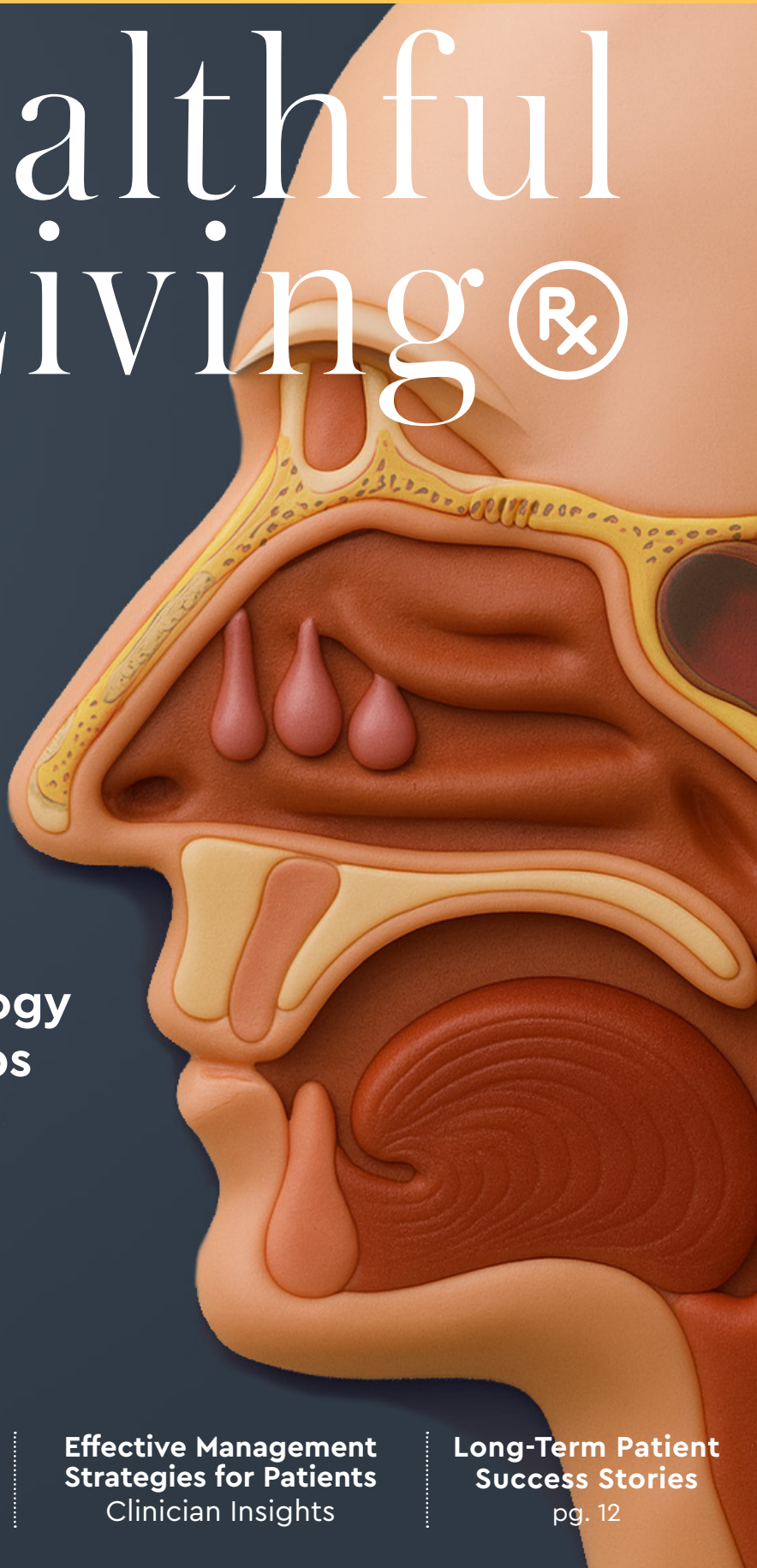
FALL/WINTER
2025

SPECIAL CRSwNP ISSUE



Interleukins and the Pathophysiology of Nasal Polyps

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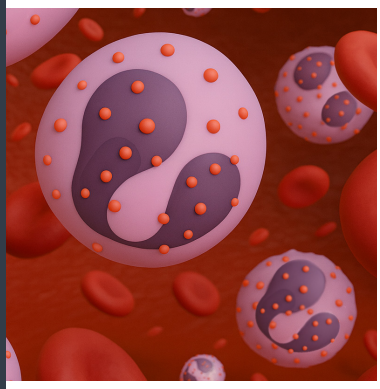
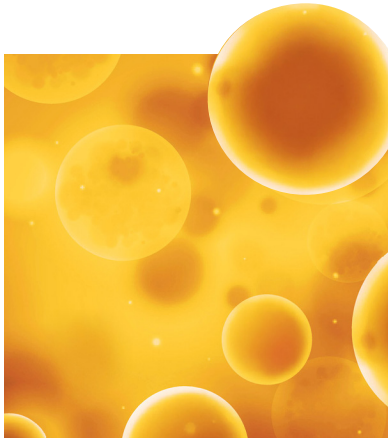




Type 2 Inflammation

Could it be the missing link in treating chronic rhinosinusitis with nasal polyps (CRSwNP)?

CRSwNP presents with symptoms including nasal obstruction, rhinorrhea, anosmia, facial pressure, headaches, and thick nasal drainage. Standard management typically begins with nasal saline rinses or irrigations, intranasal corticosteroids, and short courses of oral corticosteroids for severe flares.

When symptom control is suboptimal despite medical therapy, endoscopic sinus surgery (ESS) is often considered the next step. While this approach provides symptomatic relief, recurrence rates remain significant: One prospective, multi-center cohort of adults found that approximately 60 to 70 percent of patients who underwent ESS experienced recurrence of nasal polyps within 18 months.[1] Patients with comorbid asthma or aspirin-exacerbated respiratory disease (AERD) are particularly prone to relapse.

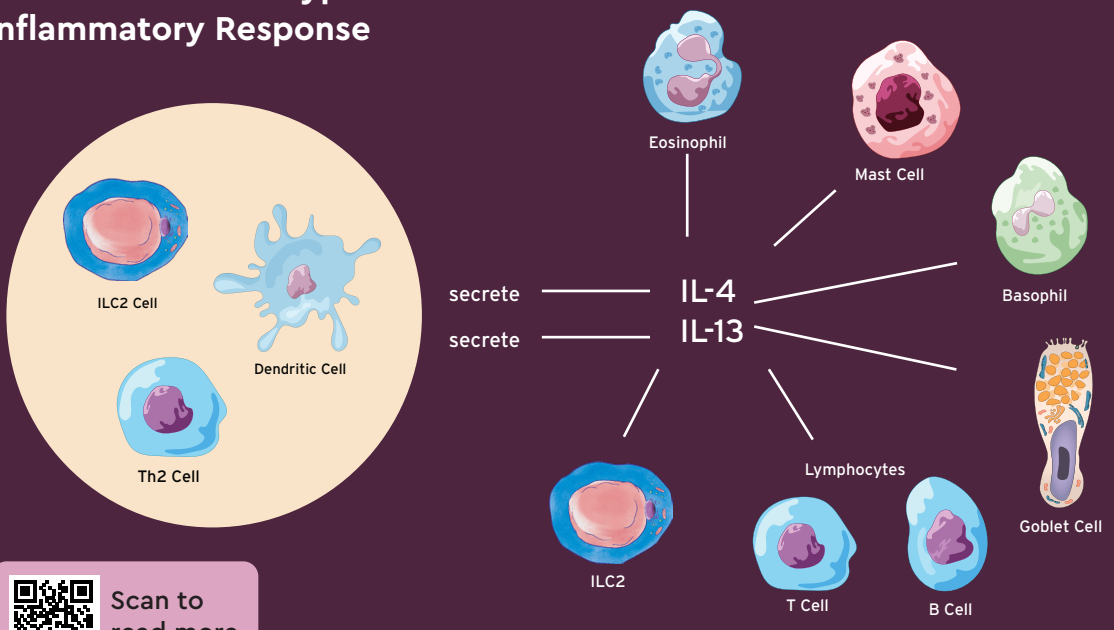
For ENTs and allergists, restoring nasal airflow and relieving sinus pressure are essential goals in managing CRSwNP. While addressing physical obstruction is a critical part of care, growing evidence points to a deeper immunological driver behind the disease. At the root often lies type 2 inflammation, an underlying process that fuels polyp formation and recurrence. Addressing this inflammatory mechanism may be key to breaking the cycle of relapse and improving long-term outcomes.

Approximately **80%** of people in Western countries with CRSwNP have type 2 inflammation, which often overlaps with asthma and eczema.

UNDERSTANDING TYPE 2 INFLAMMATION IN CRSwNP

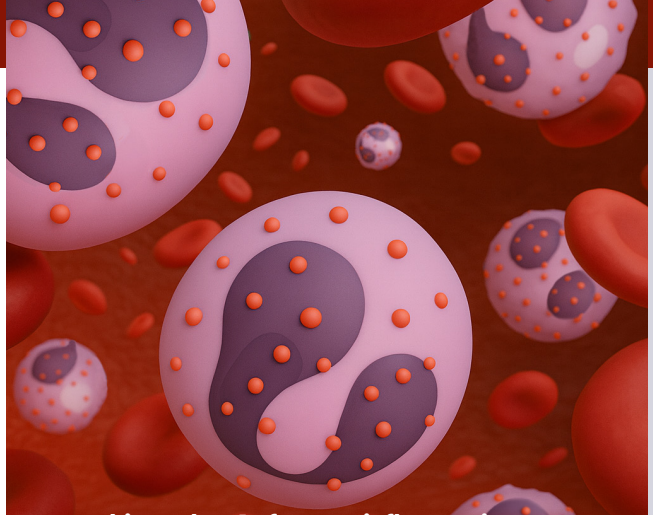
Type 2 inflammation is an immune response characterized by the release of cytokines such as interleukin (IL)-4, IL-5, and IL-13, which recruit or activate eosinophils and mast cells, promote IgE production, and cause the epithelial barrier to become disrupted. In CRSwNP, this pathway leads to persistent mucosal edema, progressive tissue remodeling, and ultimately polyp formation.[2] Unlike other types of inflammation, type 2 inflammation is linked to allergic conditions and diseases involving high levels of eosinophils.

Interleukins & the Type 2 Inflammatory Response



Scan to read more

Adapted from Gour, et al. *Cytokine*. June 2015;(75)1. https://www.sciencedirect.com/science/article/abs/pii/S1043466615002008?via%3Dihub



Key biomarkers[3] of type 2 inflammation in CRSwNP include:

- Elevated blood eosinophil counts
- Increased serum IgE levels
- Tissue expression of periostin and eosinophilic cationic protein

Identifying key biomarkers of type 2 inflammation in a clinical practice can help determine which patients would likely benefit from targeted immunomodulatory therapies.

In Western countries, about 80 percent of people with CRSwNP have type 2 inflammation, which often overlaps with asthma and eczema. These type 2 inflammatory processes can affect other parts of the body as well.

CRSwNP, however, may be a localized response. While some patients get lasting relief from surgery followed by intranasal steriod treatment, others do not.

EMERGING TREATMENTS TARGETING TYPE 2 INFLAMMATION

New biologic therapies are changing how some physicians manage CRSwNP, shifting the focus from treating symptoms to modifying the disease process.

Biologics may effectively address the immune processes driving CRSwNP rather than focusing on downstream physiological symptoms. They may be particularly appropriate for patients with evidence of type 2 inflammation or those with recurrent disease despite standard medical and surgical interventions, especially if they have other type 2 inflammatory conditions.

WHAT NEXT? PRACTICAL TAKEAWAYS FOR PHYSICIANS

When evaluating patients with CRSwNP, consider screening for type 2 inflammation, especially for patients with:

- A history of asthma, eczema, or AERD
- Blood eosinophil counts of 250 cells/μL or higher
- Elevated total IgE levels

Identifying type 2 inflammation early may help guide more targeted treatment decisions—and may be the key to breaking the cycle of recurrence in CRSwNP.

[1] DeConde et al, *Laryngoscope*. 2016; 127(3)
[2] Maspero et al, *ERJ Open Res*. 2022; 8(3)
[3] Seah et al, *Diagnostics (Basel)*. 2023; 13(4)

Why Type 2 Inflammation Matters for ENTs & Allergists

Surgery can effectively remove existing polyps, but it does not address the underlying immune mechanisms that drive recurrence. As a result, many patients face a frustrating cycle of obstruction, intervention, and regrowth. Increasing understanding of type 2 inflammation is expanding the way CRSwNP is approached—not just as a structural problem but as an immunologically driven disease.

For allergists, CRSwNP often emerges in conjunction with other type 2 inflammatory conditions like asthma, eczema, or AERD. In these conditions, nasal symptoms may remain one facet of broader immune dysfunction. When a patient presents with both CRSwNP and asthma, for example, it may indicate a shared inflammatory pathway—one that could benefit from a more integrated treatment strategy.

Clinical Scenarios

A 45-year-old patient with moderate asthma and a history of two sinus surgeries returns to your office with recurrent nasal congestion and loss of smell. Despite adherence to nasal sprays as prescribed, his symptoms haven't improved. Bloodwork reveals high eosinophil counts and elevated total IgE levels.

Consider: Is this a surgical failure or has underlying type 2 inflammation not been addressed?

A 52-year-old patient has been struggling with chronic sinus issues for years. She's had one sinus surgery and has taken several courses of oral steroids, but her nasal polyps keep coming back. She also has eczema and uses an inhaler for mild asthma. Each time the polyps regrow, the patient loses her sense of smell and feels frustrated that nothing seems to provide lasting relief.

Consider: Could this patient's recurring symptoms be the result of an untreated type 2 inflammatory process driving her nasal & respiratory symptoms?

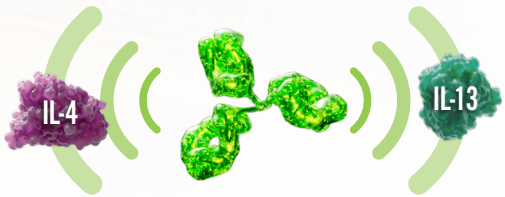
DUPIXENT® (dupilumab) Injection 300mg

Welcome Back

to life with sustained control in CRSwNP[1,2]

With DUPIXENT, aim to break the cycle of recurrence in CRSwNP[1,2]:

TARGET two of the key drivers of TYPE 2 INFLAMMATION



DUPIXENT IS THE FIRST AND ONLY

FDA-APPROVED INHIBITOR OF IL-4 AND IL-13 SIGNALING[1,*]

- DUPIXENT targets IL-4 and IL-13 signaling, two of the key and central drivers of underlying type 2 inflammation and its disease burdens[1,3,4,*]

***The mechanism of dupilumab action has not been definitively established.[1]**

IMPORTANT SAFETY INFORMATION

CONTRAINDICATION: DUPIXENT is contraindicated in patients with known hypersensitivity to dupilumab or any of its excipients.

WARNINGS AND PRECAUTIONS

Hypersensitivity: Hypersensitivity reactions, including anaphylaxis, serum sickness or serum sickness-like reactions, angioedema, generalized urticaria, rash, erythema nodosum, and erythema multiforme have been reported. If a clinically significant hypersensitivity reaction occurs, institute appropriate therapy and discontinue DUPIXENT.

Conjunctivitis and Keratitis: Conjunctivitis occurred more frequently in adult subjects with chronic rhinosinusitis with nasal polyps who received DUPIXENT compared to those who received placebo. There were no cases of keratitis reported in the CRSwNP development program. Conjunctivitis and keratitis have been reported with DUPIXENT in post-marketing settings, with some patients reporting visual disturbances (e.g. blurred vision). Advise patients or their caregivers to report new-onset or worsening eye symptoms. Consider ophthalmological examination for patients who develop conjunctivitis that does not resolve following standard treatment or signs and symptoms suggestive of keratitis, as appropriate.

Eosinophilic Conditions: Patients being treated for asthma may present with clinical features of eosinophilic pneumonia or eosinophilic granulomatosis with polyangiitis (EGPA). These events may be associated with the reduction of oral corticosteroid therapy. Healthcare providers should be alert to vasculitic rash, worsening pulmonary symptoms, cardiac complications, kidney injury, and/or neuropathy presenting in their patients with eosinophilia. Cases of eosinophilic pneumonia were reported in adults who participated in the asthma development program and cases of EGPA have been reported with DUPIXENT in adults who participated in the asthma development program as well as in adults with co-morbid asthma in the CRSwNP development program. Advise patients to report signs of eosinophilic pneumonia and EGPA. Consider withholding DUPIXENT if eosinophilic pneumonia or EGPA are suspected.

Risk Associated with Abrupt Reduction of Corticosteroid Dosage: Do not discontinue systemic, topical, or inhaled corticosteroids abruptly upon initiation of DUPIXENT. Reductions in corticosteroid dose, if appropriate, should be gradual and performed under the direct supervision of a healthcare provider. Reduction in corticosteroid dose may be associated with systemic withdrawal symptoms and/or unmask conditions previously suppressed by systemic corticosteroid therapy.

Patients with Co-morbid Asthma: Advise patients with co-morbid asthma not to adjust or stop their asthma treatments without consultation with their physicians.

Arthralgia and Psoriatic Arthritis: Arthralgia has been reported with use of DUPIXENT with some patients reporting gait disturbances or decreased mobility associated with joint symptoms; some cases resulted in hospitalization. Cases of new-onset psoriatic arthritis requiring systemic treatment have been reported with the use of DUPIXENT. Advise patients to report new-onset or worsening joint symptoms. If the symptoms persist or worsen, consider rheumatological evaluation and/or discontinuation of DUPIXENT.

Parasitic (Helminth) Infections: It is unknown if DUPIXENT will influence the immune response against helminth infections. Treat patients with pre-existing helminth infections before initiating therapy with DUPIXENT. If patients become infected while receiving treatment with DUPIXENT and do not respond to anti-helminth treatment, discontinue treatment with DUPIXENT until the infection resolves.

Vaccinations: Consider completing all age-appropriate vaccinations as recommended by current immunization guidelines prior to initiating DUPIXENT. Avoid use of live vaccines during treatment with DUPIXENT.

Not an actual DUPIXENT patient.

APPROVED IN APPROPRIATE CRSwNP PATIENTS AS YOUNG AS 12 YEARS[1]

DUPIXENT is indicated as an add-on maintenance treatment in adult and pediatric patients aged 12 years and older with inadequately controlled chronic rhinosinusitis with nasal polyps (CRSwNP).

LEARN MORE ABOUT THE

#1 PRESCRIBED BIOLOGIC† BY ALLERGISTS AND ENTs[5]

†*monoclonal antibody*

TREAT SYMPTOMS

IN ADULTS

RAPID IMPROVEMENT IN

LOSS OF SMELL AS EARLY AS DAY 3[6]

The LSM difference between DUPIXENT 300 mg Q2W + INCS (n=438) and placebo + INCS (n=286) was −0.07 (95% CI: −0.12, −0.02).[6,7]

Patient-reported outcome. Post hoc analysis. Results are descriptive. Definitive conclusions cannot be made.[6,8]

Loss of Smell (LoS) score (range 0-3): reduced score indicates improvement.[1]

RAPID IMPROVEMENT IN

NASAL CONGESTION AS EARLY AS DAY 2[6]

The LSM difference between DUPIXENT 300 mg Q2W + INCS (n=438) and placebo + INCS (n=286) was −0.07 (95% CI: −0.13, −0.01).[6,7]

Post hoc analysis. Results are descriptive. Definitive conclusions cannot be made.[6]

Nasal congestion/obstruction (NC) score (range 0-3): reduced score indicates improvement.[1]

WEEK 52

SUSTAINED IMPROVEMENT THROUGH WEEK 52[1,2,a,b]

At Week 52 in SINUS -52, the LSM difference between DUPIXENT 300 mg Q2W + INCS (n=150) and placebo + INCS (n=153) was −1.10 (95% CI: −1.31, −0.89) for LoS‡ (other secondary endpoint) and −0.98 (95% CI: −1.17, −0.79) (*P*<0.0001) for NC (key secondary endpoint).[1,2]

‡Analysis was not multiplicity controlled. Results are descriptive.[2]

[a] LoS score at Week 24 in SINUS-52 (key secondary endpoint). LSM difference between DUPIXENT 300 mg Q2W + INCS (n=295, pooled arms) and placebo + INCS (n=153): −0.98 (95% CI: −1.15, −0.81) (**−1.21** from a baseline score of **2.77** vs **−0.23** from a baseline score of **2.72**, respectively) (*P*<0.0001).[2]

[b] NC score at Week 24 in SINUS-52 (coprimary endpoint). LSM difference between DUPIXENT 300 mg Q2W + INCS (n=295, pooled arms) and placebo + INCS (n=153): −0.87 (95% CI: −1.03, −0.71) (**−1.25** from a baseline score of **2.46** vs **−0.38** from a baseline score of **2.38**, respectively) (*P*<0.0001).[1,2]

MAINTAIN CONTROL

IN ADULTS

IN SINUS TRIALS, 63% OF PATIENTS HAD PRIOR SURGERY[1,2]

↓83% REDUCTION IN THE NEED FOR SURGERY

vs placebo through Week 52 (HR: 0.17 [95% CI: 0.07, 0.46])[1]

↓74% REDUCTION IN THE NEED FOR SYSTEMIC STEROID USE

vs placebo through Week 52 (HR: 0.26 [95% CI: 0.18, 0.38])[1]

There was a 76% reduction in the need for surgery and/or systemic steroid use vs placebo through Week 52 (HR: 0.24 [95% CI: 0.17, 0.35]).[1,c,d]

[c] Individually, systemic steroid reduction and the need for sinus surgery were not multiplicity-adjusted endpoints.[1,2]

[d] In SINUS-24 and SINUS-52, DUPIXENT 300 mg Q2W + INCS (Day 0: n=438; Week 24: n=376; Week 52: n=100); placebo + INCS (Day 0: n=286; Week 24: n=187; Week 52: n=61).[1]

Phase 3 Clinical Trials: Coprimary Endpoints, LSM difference, DUPIXENT 300 mg Q2W + INCS vs placebo + INCS at Week 24[1,2]

SINUS-24 (DUPIXENT n=143, placebo n=133): NC score: −0.89 (95% CI: −1.07, −0.71). **NPS:** −2.06 (95% CI: −2.43, −1.69).

SINUS-52 (DUPIXENT n=295, placebo n=153): NC score: −0.87 (95% CI: −1.03, −0.71). **NPS:** −1.80 (95% CI: −2.10, −1.51).

Nasal polyp score (NPS) (range 0-4 for each nostril, range 0-8 in total): reduced score indicates improvement.[1]

Use of DUPIXENT for this indication in patients aged 12-17 years is supported by evidence from studies of DUPIXENT as add-on maintenance treatment in adults with inadequately controlled CRSwNP.[1]

SINUS-24[1,2]: 24-week study—276 adults (≥18 years) were randomized to receive either DUPIXENT 300 mg Q2W + INCS for 24 weeks (n=143) or placebo + INCS for 24 weeks (n=133). Subjects were required to be on background INCS[e] and to have CRSwNP despite prior sinus surgery or prior treatment with (unless ineligible to receive or intolerant to) systemic steroids in the past 2 years. Patients with chronic rhinosinusitis without nasal polyps were not included in the trial. Rescue with systemic steroids or surgery was allowed at investigators' discretion. **Coprimary endpoints:** Change from baseline at Week 24 in NC score averaged over 28 days and bilateral endoscopic NPS. **Key secondary endpoints:** Change from baseline at Week 24 in Daily LoS score, LMK-CT score, SNOT-22 score, and UPSIT score. **Prespecified pooled analysis:** Change from baseline at Week 24 in proportion of patients requiring systemic steroids or sinus surgery.

SINUS-52[1,2]: 52-week study—448 adults (≥18 years) were randomized to receive either DUPIXENT 300 mg Q2W + INCS for 52 weeks (n=150),[f] DUPIXENT 300 mg Q2W + INCS for 24 weeks followed by Q4W[g] through Week 52 (n=145),[f] or placebo + INCS for 52 weeks (n=153). Subjects enrolled in SINUS-52 were required to be on background INCS[e] and to have CRSwNP despite prior sinus surgery or prior treatment with (unless ineligible to receive or intolerant to) systemic steroids in the past 2 years. Patients with chronic rhinosinusitis without nasal polyps were not included in the trial. Rescue with systemic steroids or surgery was allowed at investigators' discretion. **Coprimary endpoints:** Change from baseline at Week 24 in NC score averaged over 28 days and bilateral endoscopic NPS. **Key secondary endpoints:** Change from baseline at Week 24 in Daily LoS score, LMK-CT score, SNOT-22 score, and UPSIT score; change from baseline at Week 52 in NC score and NPS. **Other secondary endpoints:** Change from baseline at Week 52 in Daily LoS score, LMK-CT score, SNOT-22 score, and UPSIT score. **Prespecified pooled analysis:** Change from baseline at Week 52 in proportion of patients requiring systemic steroids or sinus surgery.

[e] All patients in the placebo and DUPIXENT arms were on a background therapy of INCS, mometasone furoate nasal spray.[2]

[f] In SINUS-52, data from baseline to Week 24 are pooled from DUPIXENT 300 mg Q2W treatment arms (n=295).[2]

[g] The recommended dose of DUPIXENT for CRSwNP is 300 mg given subcutaneously every other week.[1]

HR, hazard ratio; INCS, intranasal corticosteroids; LMK-CT, Lund-Mackay computed tomography; LSM, least squares mean; Q2W, once every 2 weeks; Q4W, once every 4 weeks; SNOT-22, 22-item Sino-Nasal Outcome Test; UPSIT, University of Pennsylvania Smell Identification Test.

IMPORTANT SAFETY INFORMATION

ADVERSE REACTIONS: The most common adverse reactions (incidence ≥1%) in adult patients with CRSwNP are injection site reactions, eosinophilia, insomnia, toothache, gastritis, arthralgia, and conjunctivitis.

USE IN SPECIFIC POPULATIONS

- **Pregnancy:** A pregnancy exposure registry monitors pregnancy outcomes in women exposed to DUPIXENT during pregnancy. To enroll or obtain information call 1-877-311-8972 or go to https://mothertobaby.org/ongoing-study/dupixent/. Available data from case reports and case series with DUPIXENT use in pregnant women have not identified a drug-associated risk of major birth defects, miscarriage or adverse maternal or fetal outcomes. Human IgG antibodies are known to cross the placental barrier; therefore, DUPIXENT may be transmitted from the mother to the developing fetus.
- **Lactation:** There are no data on the presence of DUPIXENT in human milk, the effects on the breastfed infant, or the effects on milk production. Maternal IgG is known to be present in human milk. The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for DUPIXENT and any potential adverse effects on the breastfed child from DUPIXENT or from the underlying maternal condition.

Please see Brief Summary of full Prescribing Information on the following pages.

DUPIXENT® (dupilumab) injection, for subcutaneous use **Rx only**

Brief Summary of Prescribing Information

1 INDICATIONS AND USAGE

1.3 Chronic Rhinosinusitis with Nasal Polyps

DUPIXENT is indicated as an add-on maintenance treatment in adult and pediatric patients aged 12 years and older with inadequately controlled chronic rhinosinusitis with nasal polyps (CRSwNP).

4 CONTRAINDICATIONS

DUPIXENT is contraindicated in patients who have known hypersensitivity to dupilumab or any excipients of DUPIXENT. *[see Warnings and Precautions (5.1)]*.

5 WARNINGS AND PRECAUTIONS

5.1 Hypersensitivity

Hypersensitivity reactions, including anaphylaxis, serum sickness or serum sickness-like reactions, angioedema, generalized urticaria, rash, erythema nodosum, and erythema multiforme have been reported. If a clinically significant hypersensitivity reaction occurs, institute appropriate therapy and discontinue DUPIXENT. *[see Adverse Reactions (6.1, 6.2) and Clinical Pharmacology (12.6) in the full Prescribing Information]*.

5.2 Conjunctivitis and Keratitis

Conjunctivitis and keratitis adverse reactions have been reported in clinical trials *[see Adverse Reactions (6.1)]*.

In adult subjects with CRSwNP, the frequency of conjunctivitis was 2% in the DUPIXENT group compared to 1% in the placebo group in the 24-week safety pool; these subjects recovered. There were no cases of keratitis reported in the CRSwNP development program.

Conjunctivitis and keratitis adverse events have been reported with DUPIXENT in post-marketing settings, with some patients reporting visual disturbances (e.g., blurred vision) associated with conjunctivitis or keratitis.

Advise patients or their caregivers to report new onset or worsening eye symptoms to their healthcare provider. Consider ophthalmological examination for patients who develop conjunctivitis that does not resolve following standard treatment or signs and symptoms suggestive of keratitis, as appropriate.

5.3 Eosinophilic Conditions

Patients being treated for asthma may present with clinical features of eosinophilic pneumonia or eosinophilic granulomatosis with polyangiitis (EGPA). These events may be associated with the reduction of oral corticosteroid therapy. Healthcare providers should be alert to vasculitic rash, worsening pulmonary symptoms, cardiac complications, kidney injury, and/or neuropathy presenting in their patients with eosinophilia. Cases of eosinophilic pneumonia were reported in adults who participated in the asthma development program. Cases of EGPA have been reported with DUPIXENT in adults who participated in the asthma development program as well as in adults with co-morbid asthma in the CRSwNP development program. Advise patients to report signs of eosinophilic pneumonia and EGPA to their healthcare provider. Consider withholding DUPIXENT if eosinophilic pneumonia or EGPA are suspected.

5.5 Risk Associated with Abrupt Reduction of Corticosteroid Dosage

Do not discontinue systemic, topical, or inhaled corticosteroids abruptly upon initiation of therapy with DUPIXENT. Reductions in corticosteroid dose, if appropriate, should be gradual and performed under the direct supervision of a healthcare provider. Reduction in corticosteroid dose may be associated with systemic withdrawal symptoms and/or unmask conditions previously suppressed by systemic corticosteroid therapy.

5.6 Patients with Co-morbid Asthma

Advise patients with co-morbid asthma not to adjust or stop their asthma treatments without consultation with their physicians.

5.8 Arthralgia and Psoriatic Arthritis

Arthralgia has been reported with the use of DUPIXENT with some patients reporting gait disturbances or decreased mobility associated with joint symptoms; some cases resulted in hospitalization *[see Adverse Reactions (6.1)]*. In postmarketing reports, onset of arthralgia was variable, ranging from days to months after the first dose of DUPIXENT.

Cases of new-onset psoriatic arthritis requiring systemic treatment have been reported with the use of DUPIXENT.

Some patients' symptoms resolved while continuing treatment with DUPIXENT, and other patients recovered or were recovering following discontinuation of DUPIXENT.

Advise patients to report new onset or worsening joint symptoms to their healthcare provider. If symptoms persist or worsen, consider rheumatological evaluation and/or discontinuation of DUPIXENT.

5.9 Parasitic (Helminth) Infections

Patients with known helminth infections were excluded from participation in clinical studies. It is unknown if DUPIXENT will influence the immune response against helminth infections.

Treat patients with pre-existing helminth infections before initiating therapy with DUPIXENT. If patients become infected while receiving treatment with DUPIXENT and do not respond to anti-helminth treatment, discontinue treatment with DUPIXENT until the infection resolves *[see Adverse Reactions (6.1)]*.

5.10 Vaccinations

Consider completing all age-appropriate vaccinations as recommended by current immunization guidelines prior to initiating treatment with DUPIXENT. Avoid use of live vaccines during treatment with DUPIXENT. It is unknown if administration of live vaccines during DUPIXENT treatment will impact the safety or effectiveness of these vaccines. Limited data are available regarding coadministration of DUPIXENT with non-live vaccines *[see Clinical Pharmacology (12.2) in the full Prescribing Information]*.

6 ADVERSE REACTIONS

The following clinically significant adverse reactions are described elsewhere in the labeling:

- Hypersensitivity *[see Warnings and Precautions (5.1)]*
- Conjunctivitis and Keratitis *[see Warnings and Precautions (5.2)]*
- Psoriasis *[see Warnings and Precautions (5.7) in the full Prescribing Information]*
- Arthralgia and Psoriatic Arthritis *[see Warnings and Precautions (5.8)]*
- Parasitic (Helminth) Infections *[see Warnings and Precautions (5.9)]*

6.1 Clinical Trials Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

Chronic Rhinosinusitis with Nasal Polyps

A total of 722 adult subjects with chronic rhinosinusitis with nasal polyps (CRSwNP) were evaluated in 2 randomized, placebo-controlled, multicenter trials of 24 to 52 weeks duration (SINUS-24 and SINUS-52). The safety pool consisted of data from the first 24 weeks of treatment from both studies. In the safety pool, the proportion of adult subjects who discontinued treatment due to adverse events was 5% of the placebo group and 2% of the DUPIXENT 300 mg Q2W group.

Table 9 summarizes the adverse reactions that occurred at a rate of at least 1% in adult subjects treated with DUPIXENT and at a higher rate than in their respective comparator group in SINUS-24 and SINUS-52.

Table 9: Adverse Reactions Occurring in ≥1% of Adult Subjects with CRSwNP in the DUPIXENT Group in SINUS-24 and SINUS-52 and Greater than Placebo (24-Week Safety Pool)

Adverse Reaction	SINUS-24 and SINUS-52	
	DUPIXENT 300 mg Q2W N=440 n (%)	Placebo N=282 n (%)
Injection site reactions[a]	28 (6%)	12 (4%)
Conjunctivitis[b]	7 (2%)	2 (1%)
Arthralgia	14 (3%)	5 (2%)
Gastritis	7 (2%)	2 (1%)
Insomnia	6 (1%)	0 (<1%)
Eosinophilia	5 (1%)	1 (<1%)
Toothache	5 (1%)	1 (<1%)

[a] Injection site reactions cluster includes injection site reaction, pain, bruising and swelling.

[b] Conjunctivitis cluster includes conjunctivitis, allergic conjunctivitis, bacterial conjunctivitis, viral conjunctivitis, giant papillary conjunctivitis, eye irritation, and eye inflammation.

The safety profile of DUPIXENT through Week 52 was generally consistent with the safety profile observed at Week 24.

Specific Adverse Reactions

Conjunctivitis and Keratitis

In adult subjects with CRSwNP, the frequency of conjunctivitis was 2% in the DUPIXENT group compared to 1% in the placebo group in the 24-week safety pool; these subjects recovered. In the 52-week CRSwNP study (SINUS-52), the frequency of conjunctivitis was 3% in the DUPIXENT adult subjects and 1% in the placebo subjects; all of these subjects recovered. There were no cases of keratitis reported in the CRSwNP development program.

Hypersensitivity Reactions

Hypersensitivity reactions were reported in <1% of DUPIXENT-treated subjects. These included anaphylaxis, serum sickness or serum sickness-like reactions, generalized urticaria, rash, erythema nodosum, and erythema multiforme *[see Contraindications (4), and Clinical Pharmacology (12.6) in the full Prescribing Information]*.

Eosinophils

DUPIXENT-treated subjects with CRSwNP had a greater initial increase from baseline in blood eosinophil count compared to subjects receiving placebo. In adult subjects with CRSwNP (SINUS-24 and SINUS-52), the mean and median increases in blood eosinophils from baseline to Week 16 were 150 and 50 cells/mcL, respectively.

References: 1. DUPIXENT Prescribing Information. **2.** Data on file, Sanofi US. **3.** Gandhi NA, Bennett BL, Graham NMH, Pirozzi G, Stahl N, Yancopoulos GD. Targeting key proximal drivers of type 2 inflammation in disease. *Nat Rev Drug Discov*. 2016;15(1):35-50. **4.** Carsuzaa F, Béquignon É, Dufour X, de Bonnecaze G, Lecron J-C, Favot L. Cytokine signature and involvement in chronic rhinosinusitis with nasal polyps. *Int J Mol Sci*. 2022;23(1):417. doi:10.93390/ijms23010417 **5.** Data on file, Sanofi US. New to Brand Monthly Audit; data through June 2025. **6.** Hellings PW, Peters AT, Chaker AM, et al. Rapid and sustained effects of dupilumab in severe chronic rhinosinusitis with nasal polyps. *Int Forum Allergy Rhinol*. 2022;12(7):958-962. **7.** Hellings PW, Peters A, Chaker AM, et al. Rapid and sustained effects of dupilumab in patients with severe chronic rhinosinusitis with nasal polyps: analysis of the SINUS-24 and SINUS-52 phase 3 trials. *Am J Respir Crit Care Med*. 2021;203(9)(suppl S):A1345. doi:10.1164/ajrccm-conference.2021.203.1_MeetingAbstracts.A1345 **8.** Mullol J, Bachert C, Amin N, et al. Olfactory outcomes with dupilumab in chronic rhinosinusitis with nasal polyps. *J Allergy Clin Immunol Pract*. 2022;10(4):1086-1095.e5. doi:10.1016/j.jaip.2021.09.037

Across the trials for AD, asthma, CRSwNP, and CSU indications, the incidence of treatment-emergent eosinophilia (≥500 cells/mcL) was similar in DUPIXENT and placebo groups.
Treatment-emergent eosinophilia (≥5,000 cells/mcL) was observed in <3% of DUPIXENT-treated subjects and <0.5% in subjects receiving placebo (SOLO 1, SOLO 2, and AD-1021; DRI12544, QUEST, and VOYAGE; SINUS-24 and SINUS-52; PRIME and PRIME2; BOREAS and NOTUS; CUPID Study A, B, and C). Blood eosinophil counts declined to near baseline or remained below baseline levels (PRIME and PRIME2; BOREAS and NOTUS; ADEPT) during treatment *[see Warnings and Precautions (5.3) in the full Prescribing Information]*.

Cardiovascular Thromboembolic Events
In the 24-week placebo-controlled trial in subjects with CRSwNP (SINUS-24), cardiovascular thromboembolic events (cardiovascular deaths, non-fatal myocardial infarctions, and non-fatal strokes) were reported in 1 (0.7%) of the DUPIXENT group and 0 (0.0%) of the placebo group.
In the 1-year placebo-controlled trial in adult subjects with CRSwNP (SINUS-52), there were no cases of cardiovascular thromboembolic events (cardiovascular deaths, non-fatal myocardial infarctions, and non-fatal strokes) reported in any treatment arm.

6.2 Postmarketing Experience
The following adverse reactions have been identified during post-approval use of DUPIXENT. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure.

- *Immune system disorders*: angioedema
- *Musculoskeletal system disorders*: psoriatic arthritis
- *Skin and subcutaneous tissue disorders*: Facial skin reactions, including erythema, rash, scaling, edema, papules, pruritus, burning, and pain; new-onset psoriasis, vasculitis

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy
Pregnancy Exposure Registry
There is a pregnancy exposure registry that monitors pregnancy outcomes in women exposed to DUPIXENT during pregnancy.

Healthcare providers and patients may call 1-877-311-8972 or go to https://mothertobaby.org/ongoing-study/dupixent/ to enroll in or to obtain information about the registry.

Risk Summary
Available data from case reports and case series with DUPIXENT use in pregnant women have not identified a drug-associated risk of major birth defects, miscarriage, or adverse maternal or fetal outcomes. Human IgG antibodies are known to cross the placental barrier; therefore, DUPIXENT may be transmitted from the mother to the developing fetus. In an enhanced pre- and post-natal developmental study, no adverse developmental effects were observed in offspring born to pregnant monkeys after subcutaneous administration of a homologous antibody against interleukin-4-receptor alpha (IL-4Rα) during organogenesis through parturition at doses up to 10-times the maximum recommended human dose (MRHD) *(see Data)*.
The background risk of major birth defects and miscarriage for the indicated populations are unknown. All pregnancies have a background risk of birth defect, loss or other adverse outcomes. In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2% to 4% and 15% to 20%, respectively.

Clinical Considerations
Fetal/Neonatal Adverse Reactions
Transport of endogenous IgG antibodies across the placenta increases as pregnancy progresses, and peaks during the third trimester. Therefore, DUPIXENT may be present in infants exposed *in utero*. The potential clinical impact of dupilumab exposure in infants exposed *in utero* should be considered.

Data
Animal Data
In an enhanced pre- and post-natal development toxicity study, pregnant cynomolgus monkeys were administered weekly subcutaneous doses of homologous antibody against IL-4Rα up to 10-times the MRHD (on a mg/kg basis of 100 mg/kg/week) from the beginning of organogenesis to parturition. No treatment-related adverse effects on embryo-fetal toxicity or malformations, or on morphological, functional, or immunological development were observed in the infants from birth through 6 months of age.

8.2 Lactation
Risk Summary
There are no data on the presence of dupilumab in human milk, the effects on the breastfed infant, or the effects on milk production. Maternal IgG is known to be present in human milk. The effects of local gastrointestinal exposure and limited systemic exposure to dupilumab on the breastfed infant are unknown. The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for DUPIXENT and any potential adverse effects on the breastfed child from DUPIXENT or from the underlying maternal condition.

8.4 Pediatric Use
CRSwNP
The safety and effectiveness of DUPIXENT for add-on maintenance treatment in patients with inadequately controlled chronic rhinosinusitis with nasal polyps (CRSwNP) have been established in pediatric patients aged 12 years and older. Use of DUPIXENT for this indication is supported by evidence from adequate and well-controlled studies of DUPIXENT as add-on maintenance treatment in adults with inadequately controlled CRSwNP (SINUS-24 and SINUS-52) with the following additional data:

- Pharmacokinetic (PK) data from adult and pediatric patients aged 12 years and older with moderate-to-severe asthma and adult patients with inadequately controlled CRSwNP
- Safety data in pediatric patients aged 12 years and older with moderate-to-severe asthma *[see Adverse Reactions (6.1), Clinical Pharmacology (12.3), and Clinical Studies (14.3) in the full Prescribing Information]*.

Safety and effectiveness of DUPIXENT have not been established in pediatric patients younger than 12 years of age with CRSwNP.

8.5 Geriatric Use
Of the 440 subjects with CRSwNP exposed to DUPIXENT, a total of 79 subjects were 65 years or older. Efficacy and safety in this age group were similar to the overall study population.

10 OVERDOSAGE
There is no specific treatment for DUPIXENT overdose. In the event of overdosage, contact Poison Control (1-800-222-1222) for the latest recommendations and monitor the patient for any signs or symptoms of adverse reactions and institute appropriate symptomatic treatment immediately.

17 PATIENT COUNSELING INFORMATION
Advise the patient to read the FDA-approved patient labeling (Patient Information and Instructions for Use).

Pregnancy Registry
There is a pregnancy exposure registry that monitors pregnancy outcomes in women exposed to DUPIXENT during pregnancy. Encourage participation and advise patients about how they may enroll in the registry *[see Use in Specific Populations (8.1)]*.

Administration Instructions
Provide proper training to patients and/or caregivers on proper subcutaneous injection technique, including aseptic technique, and the preparation and administration of DUPIXENT prior to use. Advise patients to follow sharps disposal recommendations *[see Dosage and Administration (2.1) in the full Prescribing Information and Instructions for Use]*.

Hypersensitivity
Advise patients to discontinue DUPIXENT and to seek immediate medical attention if they experience any symptoms of systemic hypersensitivity reactions *[see Warnings and Precautions (5.1)]*.

Conjunctivitis and Keratitis
Advise patients to consult their healthcare provider if new onset or worsening eye symptoms develop *[see Warnings and Precautions (5.2)]*.

Eosinophilic Conditions
Advise patients to notify their healthcare provider if they present with clinical features of eosinophilic pneumonia or eosinophilic granulomatosis with polyangiitis *[see Warnings and Precautions (5.3)]*.

Reduction in Corticosteroid Dosage
Inform patients to not discontinue systemic or inhaled corticosteroids except under the direct supervision of a healthcare provider. Inform patients that reduction in corticosteroid dose may be associated with systemic withdrawal symptoms and/or unmask conditions previously suppressed by systemic corticosteroid therapy *[see Warnings and Precautions (5.5)]*.

Patients with Co-morbid Asthma
Advise patients with co-morbid asthma not to adjust or stop their asthma treatment without talking to their healthcare providers *[see Warnings and Precautions (5.6)]*.

Arthralgia and Psoriatic Arthritis
Advise patients that cases of new-onset psoriatic arthritis have been reported with the use of DUPIXENT. Advise patients to report new onset or worsening joint symptoms to their healthcare provider *[see Warnings and Precautions (5.8)]*.

Parasitic (Helminth) Infections
Advise patients to notify their healthcare provider if they present with clinical features consistent with helminthic infection *[see Warnings and Precautions (5.9)]*.

Vaccinations
Advise patients that vaccination with live vaccines is not recommended immediately prior to and while they are receiving DUPIXENT. Instruct patients to inform their healthcare provider that they are taking DUPIXENT prior to a potential vaccination *[see Warnings and Precautions (5.10)]*.

Manufactured by: Regeneron Pharmaceuticals, Inc., Tarrytown, NY 10591 U.S. License No. 1760; Marketed by sanofi-aventis U.S. LLC (Morristown, NJ 07960) and Regeneron Pharmaceuticals, Inc. (Tarrytown, NY 10591). For patent information: www.dupixent-patents.com

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US.DUP.25.07.0427 09/2025

DUPIXENT® (dupilumab) Injection 300mg

Interleukin Dysregulation
A Key Driver of Polyp Persistence

For patients with chronic rhinosinusitis with nasal polyps (CRSwNP), the pattern is often frustratingly predictable: blocked sinuses and congestion, diminished or loss of smell, short-lived relief, and then the often inevitable recurrence. Breaking the cycle requires targeting the immune-driven inflammation at its root.

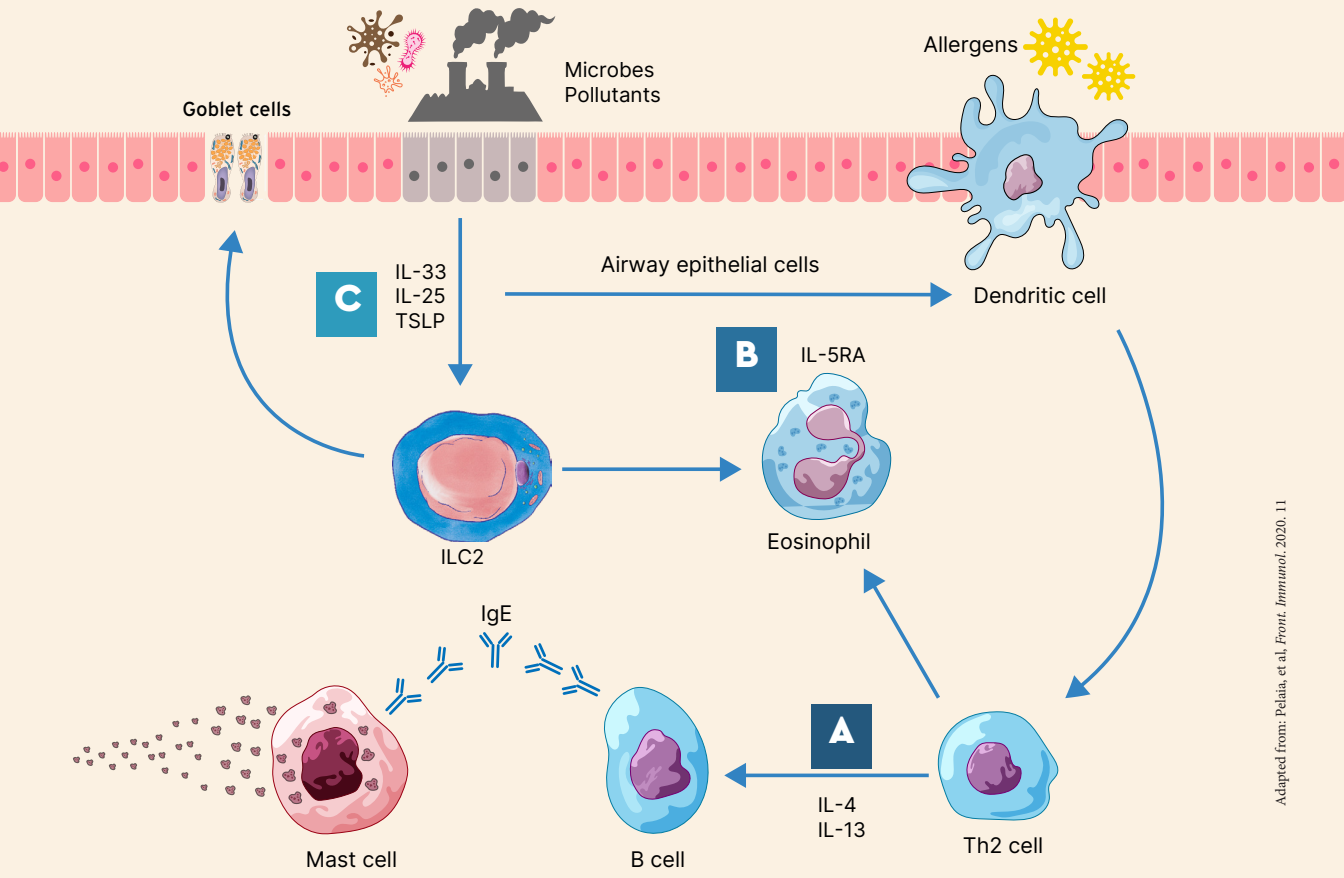
At the heart of this inflammation are small but powerful proteins: interleukins. These molecular messengers create the type 2 inflammatory response that underpins most cases of CRSwNP in Western populations.[1] Recognizing the role of key interleukins, ENTs and allergists can better identify patients likely to relapse and make informed decisions about advanced therapies that can bring long-lasting relief.

Interleukins & Clinical Decision Making

CRSwNP is increasingly recognized as a type 2 inflammatory disease (see p. 4), characterized by a cascade of cytokines that recruit and activate eosinophils, mast cells, and B-cells. Among these cytokines, several interleukins play pivotal roles.

Interleukins are not just markers of inflammation, they're active drivers of disease.

Where Interleukin Dysregulation Occurs



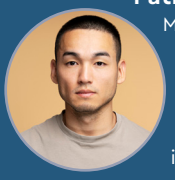
Adapted from: Pelaia, et al. *Front. Immunol.* 2020. 11

A IL-4 & IL-13: Breaking Down the Nasal Barrier

IL-4 and IL-13 are two of the most important players in type 2 inflammation. Together, they weaken the barrier of the nasal lining by reducing the production of tight junction proteins like occludin and claudins that help epithelial cells stick closely together. When this barrier is compromised, it becomes easier for allergens, bacteria, and pollutants to penetrate the nasal tissue and trigger a chronic immune response.

IL-4 and IL-13 also activate goblet cells, triggering increased mucus production, which can clog the sinuses and create an ideal environment for pathogenic bacteria like Staphylococcus aureus to thrive.[2]

Patient Vignette



Mr. L, a 42-year-old with a history of seasonal allergic rhinitis and atopic dermatitis, comes back to your practice.

Despite consistent use of intranasal sprays & multiple rounds of oral steroids, he experiences frequent sinus infections with facial pain and pressure, as well as near-constant congestion. **Endoscopic evaluation reveals bilateral nasal polyps, and a recent culture shows Staphylococcus aureus.** The unchecked activity of IL-4 and IL-13 is likely perpetuating the inflammatory cycle.

B IL-5: Fueling Eosinophilic Inflammation & Tissue Damage

The interleukin IL-5 plays a key role in the survival, activation, and recruitment of the specialized immune cells, eosinophils, which are a hallmark of type 2 inflammation. Once in the nasal tissue, eosinophils release cytotoxic proteins like major basic protein (MBP) and eosinophil cationic protein (ECP). It's these cytotoxic substances that damage the nasal lining, trigger a broad inflammatory cascade, and promote swelling and tissue remodeling in the nasal cavity.[3]

Patient Vignette

Ms. R, a 50-year-old woman with CRSwNP, moderate asthma & aspirin sensitivity, has undergone two sinus surgeries in six years. While she adheres to her daily intranasal corticosteroid regimen, her symptoms, including loss of smell, persist. **Lab tests show elevated blood eosinophil counts. IL-5 is likely driving the survival and activity of eosinophils that continue to damage her nasal tissue.**

C IL-25, IL-33 & TSLP: Setting the Stage for Chronic Disease

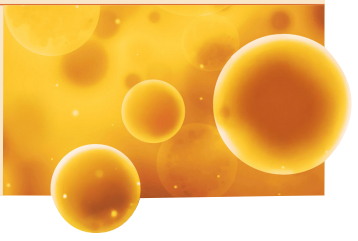
The interleukins IL-25 and IL-33, along with thymic stromal lymphopoietin (TSLP) are epithelial "alarmins" or cytokines released by stressed or injured cells early in the inflammatory process. They don't wait for the adaptive immune system to respond. Instead, they directly activate innate lymphoid cells and other early responders that begin releasing the interleukins IL-5 and IL-13, amplifying type 2 inflammation even before an allergen is formally recognized by the immune system. This feedback loop can establish chronic disease conditions long before patient symptoms become severe.[4]

Patient Vignette

Ms. D is a 36-year-old nonsmoker with no history of asthma or allergies who develops nasal congestion and loss of smell following a severe viral upper respiratory infection. She works in a poorly ventilated environment and reports regular exposure to dust and chemical fumes. Months after her initial illness, she presents with early-stage polyps and signs of persistent inflammation. For patients like Ms. D, **IL-25, IL-33, and/or TSLP likely initiated a type 2 inflammatory response before any eosinophilic infiltration was detectable**—priming her nasal tissue for chronic disease progression.

From Biology To Bedside: Why Interleukins Matter For Treatment

Interleukins are not just markers of inflammation: they're active drivers of disease. IL-4, IL-5, IL-13, IL-25, and IL-33, as well as the cytokine TSLP work in concert to break down barriers, sustain inflammation, and promote the structural changes that make nasal polyps so hard to treat. Clarifying the role of interleukins in CRSwNP supports more strategic interventions aimed at breaking the cycle of recurrence and resistance to standard therapies.



[1] Wang et al, *Clin Transl Allergy*. 2020. 10
[2] Bick et al, *J Allergy Clin Immunol*. 2024. 154(5)
[3] Kandikattu, et al. *Cytokine Growth F Rev*. 2020. 47
[4] Kim et al. *Immune Netw*. 2024. 24(1)


"After just one injection of a biologic, she called me days later and said, 'I just opened a drawer and smelled an orange. I haven't smelled an orange in years!'"
Scan to read more

Life-Changing Relief

Recent Success Stories in CRSwNP Treatment

For patients living with chronic rhinosinusitis with nasal polyps (CRSwNP), relief can feel elusive. But thanks to advances in surgical techniques and treatment therapies, many are experiencing dramatic improvements in their symptoms and quality of life.

"For many people, CRSwNP is unfortunately a chronic and lifelong problem," says Michael Marino, MD, Associate Professor of Otolaryngology at Mayo Clinic in Arizona. "Patients often deal with nasal congestion, drainage, and a decreased sense of smell, so treatment is usually long-term."

Historically, CRSwNP treatment meant topical nasal steroids and surgery for those with more severe disease. But in recent years, biologic therapies have transformed management, especially for patients whose polyps recur despite other interventions.

Treatments Tailored to Patient Needs

"The management of chronic sinusitis has always been a blend of medical and surgical therapy," explains Joseph Raviv, MD, Chief of Otolaryngology and Director of Head and Neck Surgery at Endeavor North Shore Hospital System in Chicago. "I work very closely with an allergist for these patients, and we make decisions together about these patients. We optimize medical therapy first, and if patients don't respond, and have the kind of polyp disease that we think would benefit from surgery, we'll usually offer that as a next step." Every patient's journey is unique.

Tanya M. Laidlaw, MD, Director of Translational Research at Brigham and Women's Hospital's Division of Allergy and Clinical Immunology, takes a holistic approach to her patients' cases. "As an allergist, I evaluate nose and sinuses and symptoms, but I also evaluate patients for lower respiratory tract issues and asthma symptoms," she explains. Laidlaw usually starts patients with saline rinses and intranasal steroids—for some patients, she says, this is enough. But for additional layers of treatments, she works closely with ENTs to pursue surgical or biologic options.

> "Fifteen years ago, patients with rapid recurrence were often fated to multiple surgeries in their lifetime. Now, I tell patients they're getting this diagnosis at a good time—we have really good options for them."

Mayo Clinic's Marino finds that a combination of therapies usually works best, sharing two recent success stories: "One was a patient with aspirin-exacerbated respiratory disease who had surgery and was very diligent about using nasal steroid irrigations. They've been able to control polyps for more than four years after surgery," he says. "Another patient had previous surgery elsewhere. We redid their sinus surgery and worked with our allergy colleagues to start them on a biologic, and they're getting great results through that pathway."

For patients whose polyps return after surgery, as Marino has found, biologic therapy is often the next step. This shift is reshaping long-term management of nasal polyps.

"Biologics have reduced the need for repeat surgeries," Raviv says. "Fifteen years ago, patients with rapid recurrence were often fated to multiple surgeries in their lifetime. Now, I tell patients they're getting this diagnosis at a good time—we have really good options for them." Such outcomes underscore how biologics are reshaping care.

Many of Raviv's patients not only breathe easier, but also see improvements in related conditions. "A lot of these patients also have asthma," he notes. "When surgery and biologics help control both conditions, it can be a huge improvement in quality of life."

Brigham and Women's Laidlaw recalls a patient who had lost her senses of taste and smell for around 10 years before the approval of biologics for treatment.

"She'd had five or six nasal surgeries at that point in her life, and the results didn't last," Laidlaw says. "She was sad about not being able to smell her grandbabies, and about potentially losing the memory

of making tomato sauce with her husband because her sense of smell had been gone for so long. But after just one injection of a biologic, she called me days later and said, 'I just opened a drawer and smelled an orange. I haven't smelled an orange in years!'"

The patient's story has stuck with Laidlaw, who says that a near-instant return of sense of smell can be incredibly important and emotional for patients.

Treatments for More Complex Cases

Mark Gerber, MD, Division Chief of Pediatric Otolaryngology at Phoenix Children's Hospital, recalls a particularly striking case of a child with allergic fungal sinusitis. "I thought it was polypoid disease at first," he explains. "Once I got in there, I saw it was actually allergic fungal. I evacuated the sinuses, opened things up, and then we put this child on a biologic to manage the systemic allergic disease. I just saw him, and he looks like a million bucks—there's not a polyp in his nose."

For Gerber, this patient's result reflects just how profoundly biologics have transformed care. "When I first scoped him, he was totally obstructed—he couldn't breathe through his nose at all," explains Gerber. "Now, he feels great."

These improvements are especially valuable for pediatric patients who struggle with traditional therapies. "It's not so easy to get, for example, a 10-year-old child with autism to irrigate their sinuses," Gerber adds. "Biologics have really revolutionized our ability to control the disease fast, and then we can layer in topical therapies once they're feeling better."

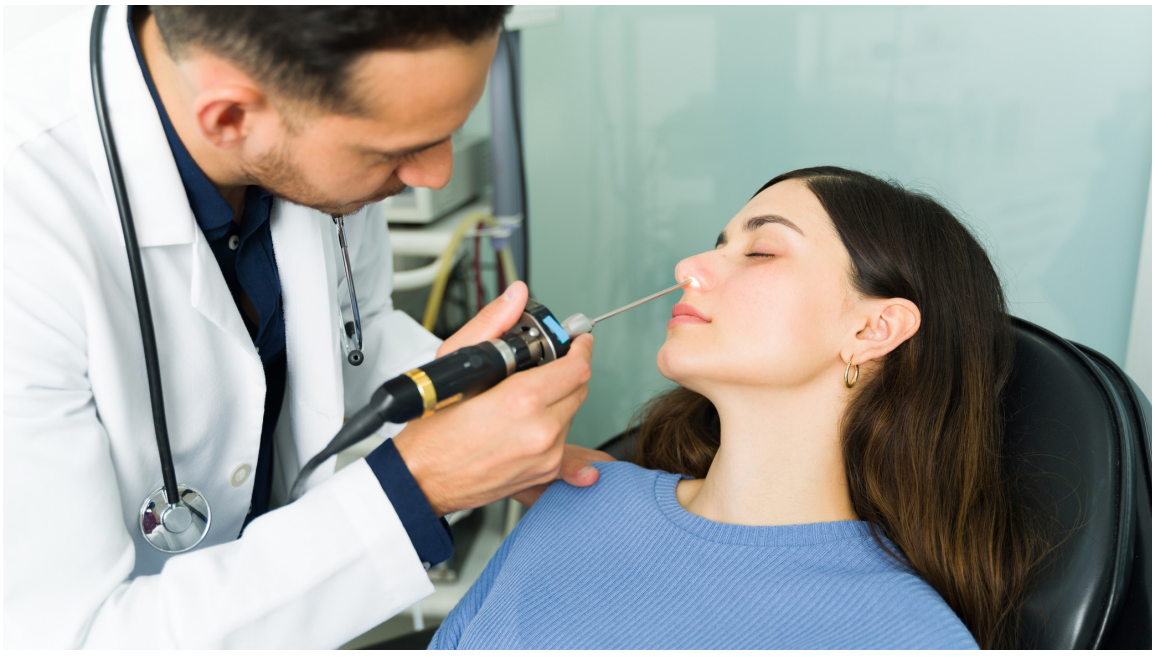
Gerber also notes that: "CRSwNP is something we control and manage, not cure. It's about going all in up front—surgery provides access, biologics and irrigations keep it in check, and then we maintain it for the long haul."

A Team Effort for Long-Term Success

All three physicians emphasized the importance of coordinated, ongoing care. "The most responsible way to manage CRSwNP now is with a team approach," Raviv says, stressing collaboration between ENT specialists and allergists. "You're really bringing in all the expertise and giving patients all their options."

This multidisciplinary approach is increasingly common. "For people with nasal polyps, we work very frequently with allergists," Marino notes. "It's two perspectives on the same condition—my focus is where surgery fits in, and [allergists'] are on what additional or advanced medications we can use to make things better for our patients."

For patients long burdened by CRSwNP symptoms like chronic congestion and loss of taste and/or smell, these new options can bring lasting relief. As Marino puts it: "These new treatments don't cure the disease, but they can give patients lasting control. And for many, that's transformative." This shift marks an important advance in long-term managment.



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Top Management Strategies for CRSwNP

Managing chronic rhinosinusitis with nasal polyps (CRSwNP) requires a multi-pronged approach between ENT specialists and allergists.

CASE 1 Long-Term Control Through Surgery & Irrigations

"We were able to do surgery... and [the patient] has been able to control polyps for more than four years after surgery [by] using nasal steroid irrigation."

– ***Michael Marino, MD,*** *Otolaryngology (ENT)/Head and Neck Surgery, Mayo Clinic*

An effective course of treatment for CRSwNP involves surgery followed by diligent postoperative care. For example, a patient with aspirin-exacerbated respiratory disease underwent sinus surgery and maintained consistent use of nasal steroid irrigations. This approach led to more than four years of polyp-free control, demonstrating the importance of adherence to therapy recommendations after surgery.

CASE 2 Biologics for Rapid Improvement in Difficult Cases

"The patient had... previous polyp removal without resolution of the loss of smell and taste. The patient came to us for a second opinion, and surgery was recommended with discussion of biologics post surgery for long-term relief. Shortly after surgery, she noted immediate relief of nasal obstruction and had diminished need for her inhalers. Within two weeks of starting the biologic, the asthma improved dramatically with rare need for the inhaler. Smell and taste returned within six weeks of starting the biologic. Patient indicated her life was back to her youth!

- ***Robert S. Bridge,*** *MD, ENT-Otolaryngology, Arizona Minimally Invasive Sinus Institute*

Patients may benefit from surgery followed by biologics, which can be used to quickly stabilize severe disease and support long-term management.

CASE 3 Addressing Recurrence with Biologics

"After surgery, if there's a recurrence, then we introduce the option of biologics."

– ***Joseph Raviv, MD,*** *Chief, Otolaryngology; Director, Head and Neck Surgery, Endeavor North Shore Hospital System*

In patients who have recurrent nasal polyps despite prior interventions, combining revision surgery with biologic therapy can yield strong results. In one case, surgery was paired with biologics, coordinated through collaboration with allergists. This dual strategy reduced recurrence of the polyps and improved symptom control. Together, these findings underscore the value of biologics as an important treatment option for patients who do not achieve adequate relief from conventional therapies like surgery. Such integration reflects the evolving standard of care in CRSwNP.

CASE 4 Team-Based Care for Sustainable Outcomes

"Every now and then, I have rhinologists from the community who have patients with severe nasal polyps, and it's just for whatever reason beyond their comfort level of severity. Maybe they're not responding to treatment as much as they expected. At that point, they'll refer patients to me for further immunologic evaluation."

- ***Tanya M. Laidlaw,*** *MD, Allergy & Immunology, Medical Oncology, Brigham & Women's Hospital*

Ultimately, CRSwNP management is not one-size-fits-all. Combining surgery, diligent medical therapy, biologics, and multidisciplinary teamwork offers patients the best chance at lasting relief.

Help your patients manage chronic rhinosinusitis with nasal polyps (CRSwNP).

Even with a diagnosis and treatment plan, people living with nasal polyps may still go through unexpected challenges in day-to-day management, impacting quality of life. In AAFA's Life with Nasal Polyps report, 54% of people said reducing or eliminating symptoms was a significant challenge.

Top concerns of patients with CRSwNP:

- Loss of taste and smell that can have negative, even dangerous consequences (inability to smell fire, gas leaks, rotten food, etc.)
- Nasal symptoms (congestion, postnasal drip)
- Sleep disruption due to congestion
- Social, mental, emotional health due to impacts on work, school, and relationships

The impact of nasal polyps can be significant. Help your patients successfully manage their condition with evidence-based resources from the Asthma and Allergy Foundation of America (AAFA).

Free patient guide to nasal polyps: aafa.org/nps
Free CME online webinars for clinicians: aafa.org/cme

Asthma and Allergy Foundation of America

aafa.org