

# APNEE study: a challenge to identify patients treated with dupilumab for nasal polyposis in real-life settings in France.

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## SNDS (National Health Data System)

Encompasses 99,8% of the French population requiring medical care

### Data available

- Patient characteristics:
  - Age, gender, residency
- Reimbursements:
  - Drugs, biological and medical procedures, medical visits
- Hospitalizations and diagnosis

### Data non available

- Socio-economic characteristics
- Risk factors: alcohol, tobacco, etc.
- Medical or biological results
- Diagnosis for outpatient visits
- Prescriber speciality at hospital

## Chronic rhinosinusitis with nasal polyps (CRSwNP):

### Characteristics of disease:

Chronic rhinosinusitis with nasal polyps (CRSwNP) is an inflammatory disease of the upper airways leading to hampered breathing conditions with nasal congestion and discharge. Loss of smell and facial pressure is associated with poor quality of life.

### Current management:

The first line treatment for CRSwNP is based on local and systemic corticosteroids and iterative sinonasal surgery.

Dupilumab was the first biological treatment approved by the European Commission. It is reimbursed in France since July 2021, for patients inadequately controlled by both systemic corticosteroids and surgery.

## OBJECTIVES

- Characterize patients treated with dupilumab for CRSwNP,
- Describe dupilumab utilization in real-life setting for CRSwNP.

## METHODS

- A real-life, retrospective longitudinal cohort study based on the SNDS database was conducted to characterize patients treated with dupilumab for CRSwNP in France between 2021 and 2023.

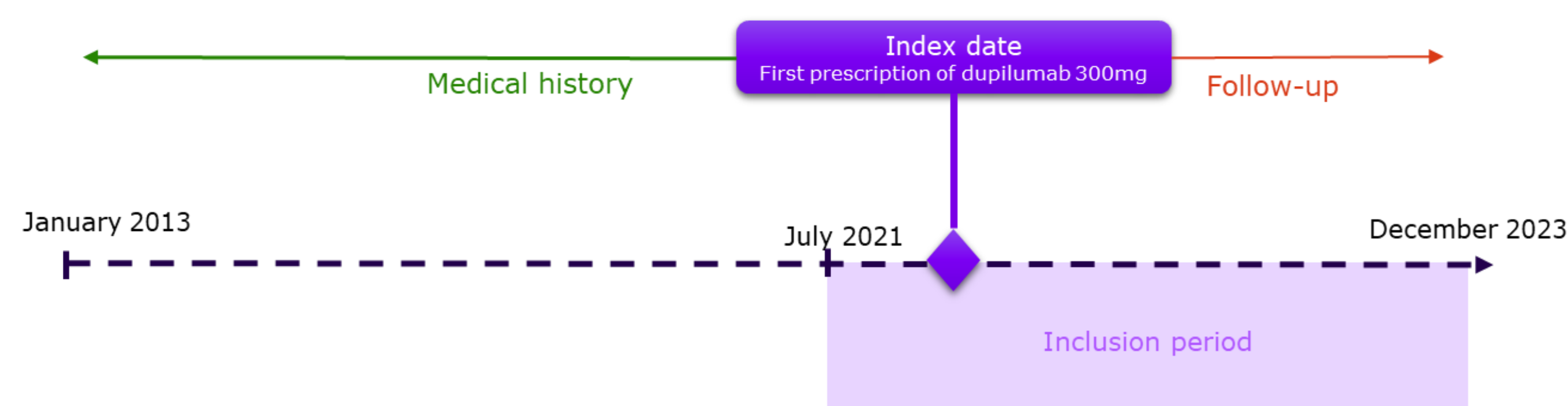
During the study period, dupilumab was reimbursed in France for three indications : atopic dermatitis (AD), asthma and CRSwNP.

➔ As the indication is not specified in the SNDS, an algorithm had to be developed to identify the indication of Dupixent.

For each patient:

- index date was the **first prescription of dupilumab 300mg**,
- pre-index date data, considered as **medical history**, were extracted to better characterize the patient's clinical setting, define the factors leading to the dupilumab treatment and identify the indication for prescribing dupilumab,
- post-index date data, considered as **follow up**, were extracted from the database to analyze overall outcome after dupilumab initiation.

Figure 1. Study design



Two rhinologic surgeons and 2 methodologist with strong expertise in CRSwNP management and health care data mining were joined upon to design an algorithm aiming to precisely identify CRSwNP patients.

This algorithm was also submitted to a dermatologist and a pneumologist to improve the exclusion criteria for patients treated with biologics for asthma and AD.

The inputs listed in Table 1 were used to identify the indication subject to prescription of dupilumab.

Table 1. Inputs used in the algorithm to identify the indication of prescription

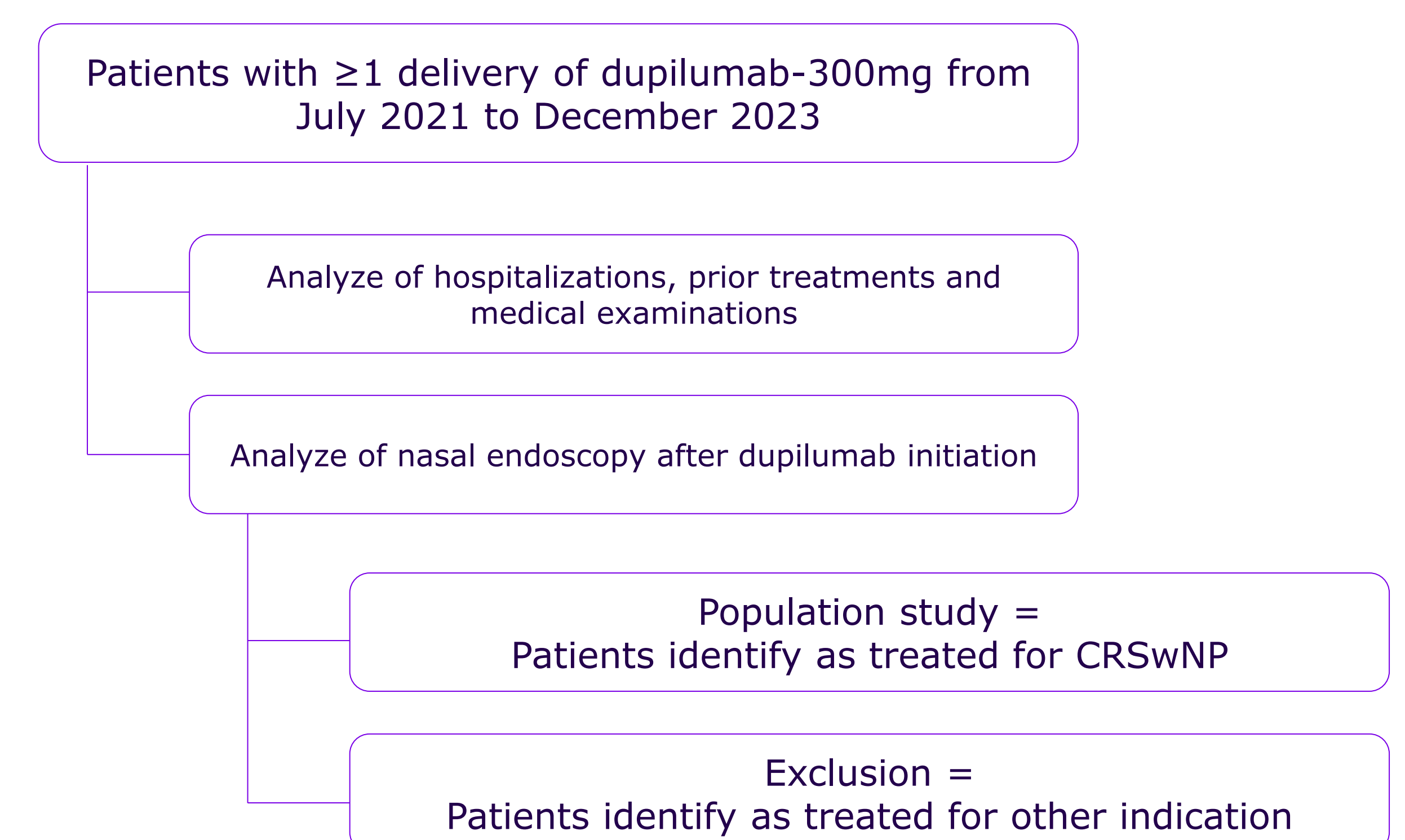
Medications (all drugs delivered in pharmacy)
Hospitalizations and associated diagnosis
Outpatient consultations (date, number, specialist)
Biology (only the type of test, no result available)
Medical procedures

## RESULTS

During the study period, 13,000 patients with  $\geq 1$  delivery of dupilumab 300mg were identified (51.2% male).

As in prior algorithms developed for other indications, patients were sorted according to their prior treatment and medical examinations as reported. The classification of patients not only relied on prior events (treatment, medical examination, hospitalization) but also on endoscopic examination performed after dupilumab initiation. Indeed, in order to make sure that the data collected was specific to CRSwNP patients, the occurrence of nasal endoscopy to assess the mucosal response after the initiation of dupilumab was retrieved. If markers of two pathologies are found, hospitalization will be the discriminating factor. In doing so, 2,300 patients with CRSwNP treated with dupilumab were expected to be rightfully selected.

Figure 2. Classification of patients



A disease-specific algorithm conceived with clinical and methodologist experts is mandatory for each study according to the objectives and the population

Clinical experts from all indications of reimbursement must be included, whatever the explored indication.

## LEARNINGS

The algorithm is a decision tree; when markers of two pathologies are present, a decision rule has to be implemented to classify the patients

As diagnosis is not available in the SNDS for outpatient settings, it is very challenging, to differentiate similar pathologies treated with the same treatments and various specialists

## CONCLUSION

The algorithm designed in the APNEE study seems to be robust to identify dupilumab-treated patients for CRSwNP, according to expert opinion.

During the study period (2021-2023), dupilumab was reimbursed for only three indications (AD, asthma and CRSwNP), but with new indications coming as prurigo nodularis and chronic obstructive pulmonary disease, the differentiation between indications will become increasingly challenging though essential for evaluation of disease-specific dupilumab consumption in France.