Supplementary materials

Description of assessment

Allergic Rhinitis Visual Analogue Scale (ARS-VAS)

The AR-VAS is a validated measuring instrument for the documentation of symptoms and therapy monitoring in allergic rhinitis (AR). Patients with coexisting AR will be provided with an ungraduated VAS and will be asked to place a mark on the scale to indicate the severity of AR symptoms. Patients will be asked: “Overall how much are your allergic symptoms bothering you today?” The VAS extremities will be noted as “Not at all bothersome” to the left (score of 0) and “Extremely bothersome” to the right (score of 100).

Asthma Control Questionnaire, 6-Question Version (ACQ-6)

The 6-item version of the Juniper Asthma Control Questionnaire (ACQ-6) is a validated questionnaire to evaluate asthma control in registry patients with comorbid asthma. The ACQ-6 assesses the most common asthma symptoms: 1) frequency in past week awoken by asthma during the night; 2) severity of asthma symptoms in the morning; 3) limitation of daily activities due to asthma; 4) shortness of breath due to asthma; 5) wheeze; and 6) rescue bronchodilator use.

Patients are asked to recall how their asthma has been during the previous week and to respond to the symptom questions on a 7-point scale (where 0 = no impairment and 6 = maximum impairment), where a higher score indicates lower asthma control. Patients with a score <1.0 reflect adequately controlled asthma and patients with scores ≥1.0 reflect inadequately controlled asthma. The minimal clinically important difference (MCID) is a change in score of ≥0.5.

The European Quality of Life-5 Dimension, 5-Level Scale (EQ-5D-5L)

The EQ-5D-5L is a standardized health-related quality of life (HRQoL) questionnaire developed by the EuroQoL Group to provide a simple, generic measure of health for clinical and economic appraisal. The EQ-5D-5L is designed for self-completion by patients, and consists of 2 pages, the EQ-5D-5L descriptive system and the EuroQol-visual analogue scale (EQ-VAS). The EQ-5D-5L descriptive system comprises 5 dimensions: mobility; self-care; usual activities; pain/discomfort; and anxiety/depression. Each dimension has 5 levels: no problems; slight problems; moderate problems; severe problems; and extreme problems. The EQ-VAS records the respondent's self-rated health on a vertical VAS. The EQ-VAS 'thermometer' has endpoints of 100 (best imaginable health state) and 0 (worst imaginable health state).

Fractional Exhaled Nitric Oxide Levels (FeNO)

If consistent with the standard-of-care at the respective study center, FeNO (a marker of airway inflammation) should be measured prior to spirometry and following a fast of ≥1 hour.

Global Patient Assessment

The Global Patient Assessment is a 2-component questionnaire on symptom severity over the past week and the patient's overall satisfaction with their CRSwNP treatment.

The components are:

Please choose the response below that best describes the severity of your CRSwNP symptoms over the past week:

- No symptoms

- Mild
- Moderate
- Severe

Taking all things into account, how satisfied or dissatisfied are you with your current CRSwNP medications?

- Very satisfied
- Satisfied
- Undecided
- Dissatisfied
- Very dissatisfied

Global Physician Assessment

The Global Physician Assessment is a 1-item question asking physicians to rate the severity of their patient's CRSwNP:

Please answer this question based on your assessment of the patient today.

Overall, how severe is your patient's CRSwNP?

- Mild
- Moderate
- Severe
- Very severe

Healthcare Resource Utilization Questionnaire (HCRUQ)

The HCRUQ is a questionnaire filled out by the participating study site. At baseline, the past 1-year of data are collected from the physician's charts. The investigator could get this information based on their charts, or answers from the patient on healthcare resource use related to CRSwNP. The HCRUQ collects information on unscheduled healthcare resource encounters related to CRSwNP, including inpatient visits, emergency visits, and physician office visits, and includes the dates of visits and duration of any hospitalizations, together with the reason for the visits.

Loss of smell score (LoS)

The LoS score is a patient-reported assessment that evaluates smell impairment severity on a daily basis. Patients use an e-diary to record smell impairment on a 0–3 categorical scale where 0 = no symptoms, 1 = mild symptoms, 2 = moderate symptoms and 3 = severe symptoms.

Lund-Mackay computed tomography (LMK-CT)

The LMK-CT system is a widely-validated physician-derived assessment based on evaluation of sinus opacification, with points assigned for degree of opacification (0 = normal, 1 = partial opacification, 2 = total opacification). Points are assigned for the maxillary, anterior ethmoid, posterior ethmoid, sphenoid, and frontal sinus on each side. The is graded as 0 = not occluded or 2 = occluded, deriving a maximum score of 12 per side and a total score range of 0–24. For patients in whom the osteomeatal complex is missing (because of a previous surgery) the CT scan reader should consider the location of the former osteomeatal complex and provide a scoring (as if the OC was there).

Mini Asthma Quality of Life Questionnaire (MiniAQLQ)

The MiniAQLQ has 15 items and was designed to meet the needs of large studies and long-term monitoring. Each item is rated on a 7-point Likert scale (from 1–7). There are 4 domains, with the number of items in each domain as follows:

- Symptoms (5 items)
- Activity limitation (4 items)
- Emotional function (3 items)
- Environmental stimuli (3 items)

A global score is calculated as an average of the domain scores, ranging from 1–7, where higher scores indicate better quality of life. The instrument has been shown to be reliable, valid, and sensitive to change. The MCID is a change in score of ≥0.5.

Nasal congestion/obstruction (NC) score

NC score is assessed by patients on a daily basis throughout the study, using an e-diary to record daily morning ante meridiem (AM) symptom severity. Scoring is assessed using a 0–3 categorical scale where 0 = no symptoms, 1 = mild symptoms, 2 = moderate symptoms and 3 = severe symptoms. The NC score is then calculated from the monthly average of patient-assessed daily scores.

Patient Oriented Eczema Measure (POEM)

The POEM is to be completed by patients with concurrent atopic dermatitis. It is a 7-item, validated questionnaire used in clinical practice and clinical trials to assess disease

symptoms in children and adults. The format is a response to 7 items (dryness, itching, flaking, cracking, sleep loss, bleeding, and weeping) based on the frequency of these disease symptoms during the past week (ie, days, 1 = 1– 2 days, 2 = 3–4 days, 3 = 5–6 days, and 4 = all days) with a scoring system of 0–28; the total score reflects disease-related morbidity.

Peak nasal inspiratory flow (PNIF)

PNIF evaluates a physiologic measure of air flow through both nasal cavities during forced inspiration, expressed in liters of air per minute. It is the best validated technique for the evaluation of nasal flow through the nose. Nasal inspiration correlates with the patient's subjective feeling of nasal obstruction, and is the best validated technique for monitoring nasal flow in clinical trials.

PNIF is recorded through the use of a PNIF meter. Patients are instructed on the use of the device, and PNIF efforts are recording via daily e-diary. Taking the best of 3 effort outcomes with less than 10% variation is considered to be the best means of expression of the result.

Short-Form 12 Version 2.0 (SF-12)

The SF-12 is a generic patient-reported questionnaire measuring general health status during the last 4 weeks. It has 12 items that measure 8 multi-item dimensions of health: physical functioning; social functioning; role limitations due to physical problems; role limitations due to emotional problems; mental health; energy/vitality; pain; and general health perception.

Sino-Nasal Outcome Test (SNOT-22)

The SNOT-22 is to be completed by patients with concurrent chronic (rhino) sinusitis and/or nasal polyposis. It is a validated questionnaire to assess the impact of chronic rhinosinusitis on HRQoL. The SNOT-22 has 22 items, 5 domains, and a global score. The 5 domains include:

- Nasal (range 0 to 30)
- Ear (range 0 to 15)
- Sleep (0 to 20)
- General and practical (0 to 30)
- Emotional (0 to 15)

The range of the global score is 0–110, and the MCID is ≥8.9. Lower scores indicate less impact. The recall period of the assessment is within the past 2 weeks.

Sniffin Stick test

The Sniffin' stick test consists of 12 scented pens, each with an associated test card that provides a multiple-choice question with four alternative words to describe the odour. The odorant is released through removal of the pen cap. The pen is held 2 cm from the nose and patients smell the odour for 2–3 seconds before selecting an answer, to provide a score out of 12 possible correct answers. Outcomes are normalised for patient age and gender to indicate the level of smell impairment.

Spirometry

Spirometry is performed according to the standard-of-care at each study center. The following assessments are suggested: forced expiratory volume in 1 second, peak expiratory flow, forced vital capacity, and forced expiratory flow between 25% to 75% of vital capacity.

Standardized Rhinoconjunctivitis Quality of Life Questionnaire (≥12 Years of Age) (MiniRQLQ(S))

The MiniRQLQ(S) is an instrument with 28 items across 7 domains for patients ≥12 years of age and older: activities (3 items); sleep (3 items); non-hay-fever symptoms (7 items); practical problems (3 items); nasal symptoms (4 items); eye symptoms (4 items); and emotions (4 items). The recall period of the assessment is within the past week. Patients record their score for each item on a 7-point Likert-type response scale from 0 (“not troubled” or “none of the time”) to 6 (“extremely troubled” or “all of the time”). Domain and overall scores range from 0–6 where a lower score indicates better HRQoL.

Total Symptom Score (TSS)

Patients will complete the electronic diary in the morning to report severity of 4 symptoms: 1) nasal congestion; 2) anterior rhinorrhea (runny nose); 3) posterior rhinorrhea (post-nasal drip); and 4) loss of sense of smell, scored using a 0 to 3 categorical scale where 0 = no symptoms, 1 = mild symptoms, 2 = moderate symptoms, and 3 = severe symptoms. TSS is a composite score (range 0–9) consisting of the sum of the following symptoms assessed daily: nasal congestion/obstruction, decreased/loss of sense of smell, rhinorrhea (average of anterior/posterior nasal discharge).

University of Pennsylvania Smell Identification Test (UPSIT)

The UPSIT is a rapid and easy-to-administer method to quantitatively assess human olfactory function that, when administered in the standardized manner, shows a high degree of uniformity in performance when tested in different laboratories.

The test consists of 4 booklets, each containing 10 odorants with one odorant per page (40 odours in total). The test-time is about 15 min. Stimuli are embedded in 10–50 μm diameter plastic microcapsules on brown strips at the bottom of each page. Above each odorant strip is a multiple-choice question with four alternative words to describe the odour. The odorant is released by rubbing the strip with the tip of a pencil, and the patient indicates which of four words best describes the odour, to provide a score out of 40 possible correct answers. The odorants of the UPSIT test take into account cultural differences.

A particular strength of this test is that it provides an olfactory diagnosis based on comparison of the patient's test score with normative data, providing a percentile score of an individual relative to his or her age-matched normal group. Furthermore, a clinician can distinguish patients with a normal sense of smell from those with different levels of smell impairment or loss.

Work Productivity and Activity Impairment Questionnaire for chronic rhinosinusitis with nasal polyps (WPAI-CRSwNP)

The WPAI-CRSwNP is designed to assess the impact of CRSwNP on patient productivity. It is a 6-item questionnaire that measures impairments in work and activities over a 7-day recall period. Outcomes are expressed as impairment percentages, with higher numbers indicating greater impairment and less productivity. The WPAI-CRSwNP will only be administered to adult patients who are working, either part time or full time. If patients are not working at baseline, they will not complete the questionnaire. For reference period(s) when

the patient is not working for the entire reference period, the questionnaire does not need to be completed.