The EUFOREA pocket guide for chronic rhinosinusitis*

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Dear Editor:

Chronic rhinosinusitis (CRS) is known to affect around 5 % of the total population, with major impact on the quality of life of those severely affected [1]. Despite a substantial burden on individuals, society and health economies, CRS often remains underdiagnosed, under-estimated and under-treated [2]. International guidelines like the European Position Paper on Rhinosinusitis and Nasal Polyps (EPOS) [3] and the International Consensus statement on Allergy and Rhinology: Rhinosinusitis 2021 (ICAR) [4] offer physicians insight into the recommended treatment options for CRS, with an overview of effective strategies and guidance of diagnosis and care throughout the disease journey of CRS. However, barriers to access to appropriate diagnosis and effective treatment remain at patient, pharmacist and physician levels, including inability to recognize CRS and diagnose it, inappropriate CRS medication prescription/use, poor concordance with CRS treatment recommendations and/or lack of awareness of newly available options for CRS care [5]. Of note, endoscopic sinus surgery and oral corticosteroids (OCS) do not always result in full disease control, with the need of referral to tertiary care [6]. For the evaluation of the severity of disease and follow-up of treatment outcomes, the visual analogue scale (VAS) has been introduced as a simple tool, mainly in the context of e-health for disease monitoring and clinical trials. However, guidelines based solely on VAS may not reflect the needs of physicians and patients in real-life, since VAS scores are not routinely used in everyday practice and may not capture the clinical phenotypes. In addition to VAS scores, Sino-Nasal Outcome test (SNOT)-22 scores may be more informative given the evaluation of different sinonasal and overall symptoms reflecting the burden of disease, and the well-known scores in the general population as well as in those with severe CRSwNP having been included in all surgery and biological trials in recent years [7, 8].

Building further on the success of the pocket guides for adult and paediatric allergic rhinitis [9, 10], the European Forum for Research & Education in Allergy & Airway Diseases (EUFOREA) in collaboration with global key opinion leaders in the field of chronic inflammatory airways disease, has developed a CRS pocket guide with a new treatment algorithm with the following aims: to expedite access to CRS diagnosis and treatment, to simplify clinical care pathways of CRS, and to facilitate coordinated care amongst the stakeholders involved in CRS care. The algorithm is based on the EPOS2020 and ICAR-Rhinosinusitis 2021 documents, and designed for real-life use. Given the clear messages on key diagnostic actions and simplicity of the CRS algorithm, the EUFOREA pocket guide aims at improving CRS knowledge amongst all stakeholders involved in CRS care and streamlining the transition of patients between self-, pharmacy-, GP- and specialist-care, facilitating more coordinated care. The EUFOREA pocket guide also includes a diagnostic checklist when assessing CRS patients including a list of symptoms suggestive and less suggestive of CRS, questions on suspected comorbid asthma, and instructions on how to use the VAS for CRS. The diagnosis of smell dysfunction and nasal congestion or obstruction require specific diagnostic actions beyond history by health care providers (Figure 1). In addition a list of suggested indications is provided for referral of specific CRS patients to specific colleagues, reflecting the heterogeneity of health care providers involved in CRS care. It makes sense to adopt multi-disciplinary assessments and management for specific patients suffering from como-

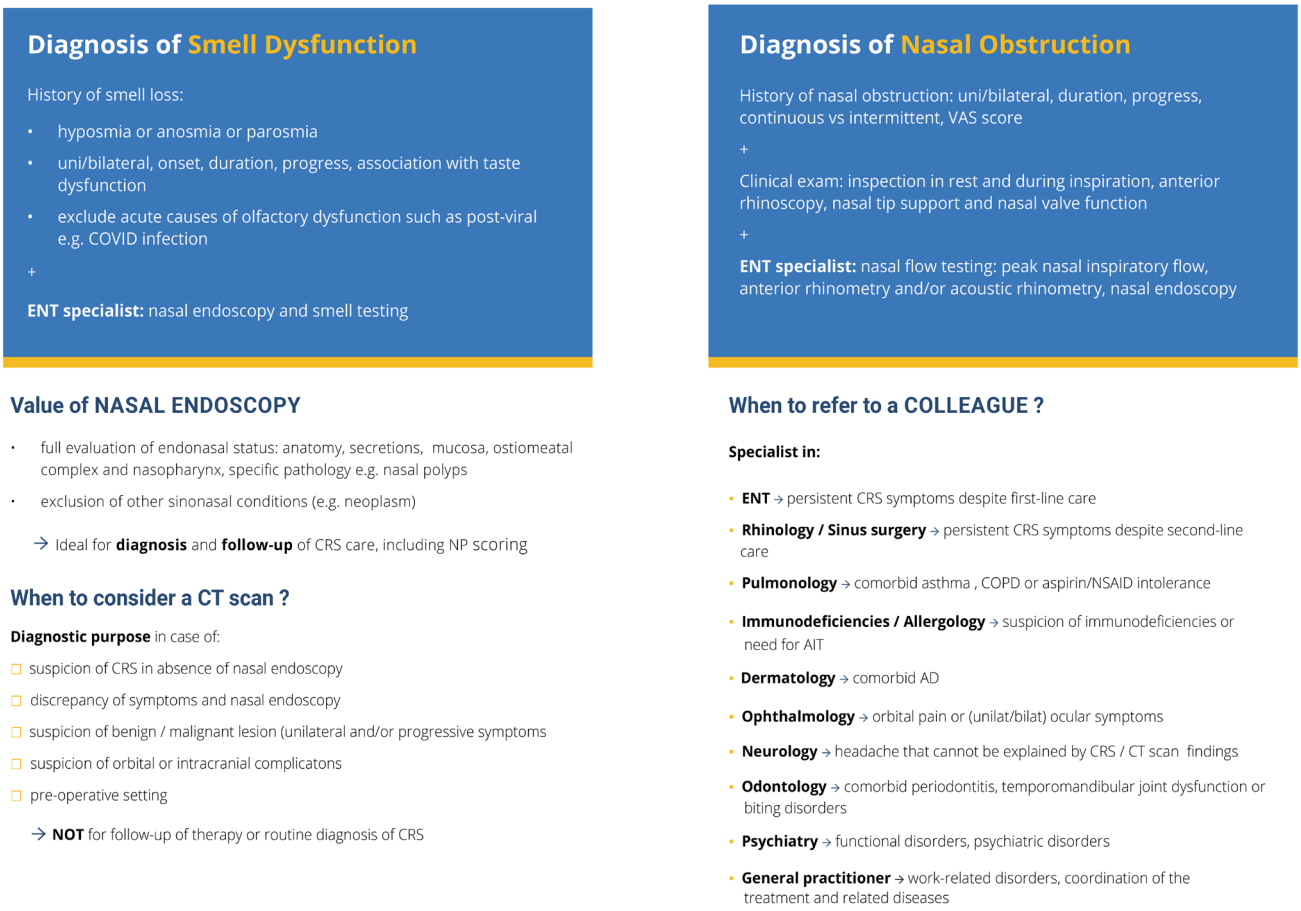

Figure 1. Most relevant diagnostic actions and consideration in relation to CRS care.

rbidities, and/or neurological, ophthalmologic, dentogenic, psychologic and/or occupational factors contributing to the CRS phenotype.

The CRS pocket guide is presented as 5 easy steps: (i) diagnosis, (ii) classification of patients, (iii) definition of therapy, (iv) selection of product, and (v) activation of treatment plan, and with pro-active follow-up of patients. As an overall consideration (Figure 2), patients should be educated on the disease, treatment adherence and avoidance of external triggers, with nasal rinsing and nasal corticosteroids being the mainstay of care. In case of failure of the basics, referred to as step 1 in the algorithm, a firm diagnosis is recommended at specialist level with the consideration of OCS or Endoscopic Sinus Surgery (ESS). In case of failure of step 2 treatment and/or uncontrolled severe CRS, endotyping is recommended at specialist level, including different options for the Type 1 and Type 2 endotypes of CRS. Interestingly, the key pillars of care for severe uncontrolled CRS, i.e., OCS, ESS and biologics all have pros and cons that need to be considered at the time of implementation. At any time in the disease journey, there are red flags that warrant immediate referral and emergency care, as listed in the treatment algorithm (Figure 2).

The CRS pocket guide is available on the EUFOREA (www.euforea.eu) and Rhinology (https://www.rhinologyjournal.com) website, and easy-to-use in everyday clinical practice for any care provider as it is concise, patient-centered, and captures every single patient who attends the outpatient clinic of any care provider. Upon the suggestion of the Patient Advisory Board of EUFOREA, a patient version will appear in 2023 on the EUFOREA website.

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All authors contributed to the development and finetuning of the treatment algorithm and the pocket guide.

Conflict of interest

P. Hellings: lecture fees and/or participation at expert board meetings of ALK, Stallergenes, Mylan, Novartis, GSK and Sanofi.

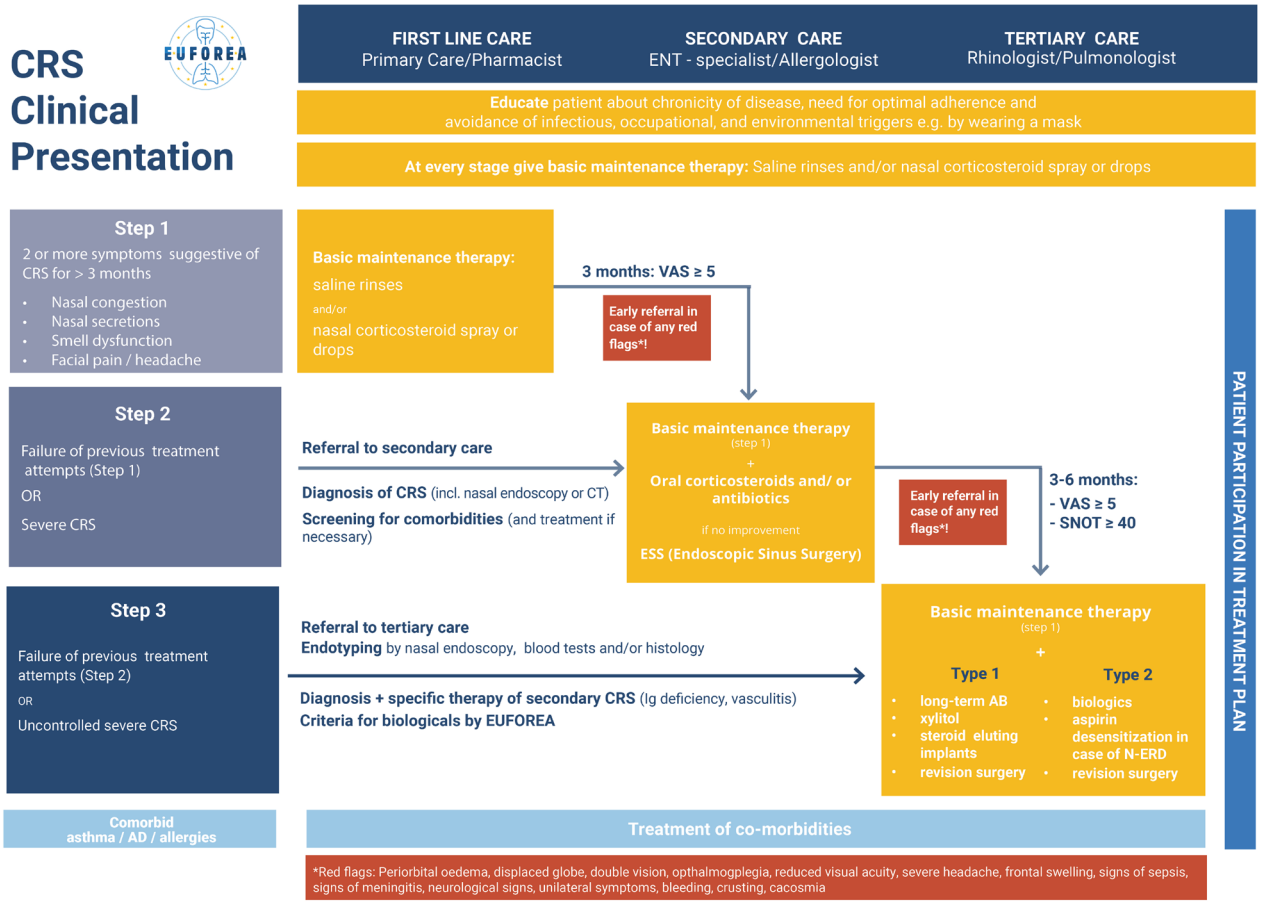

Figure 2. EUFOREA CRS pocket guide treatment algorithm. AB: Antibiotics; EUFOREA: European Forum for Research & Education in Allergy & Airway Diseases; VAS: visual analogue scale.

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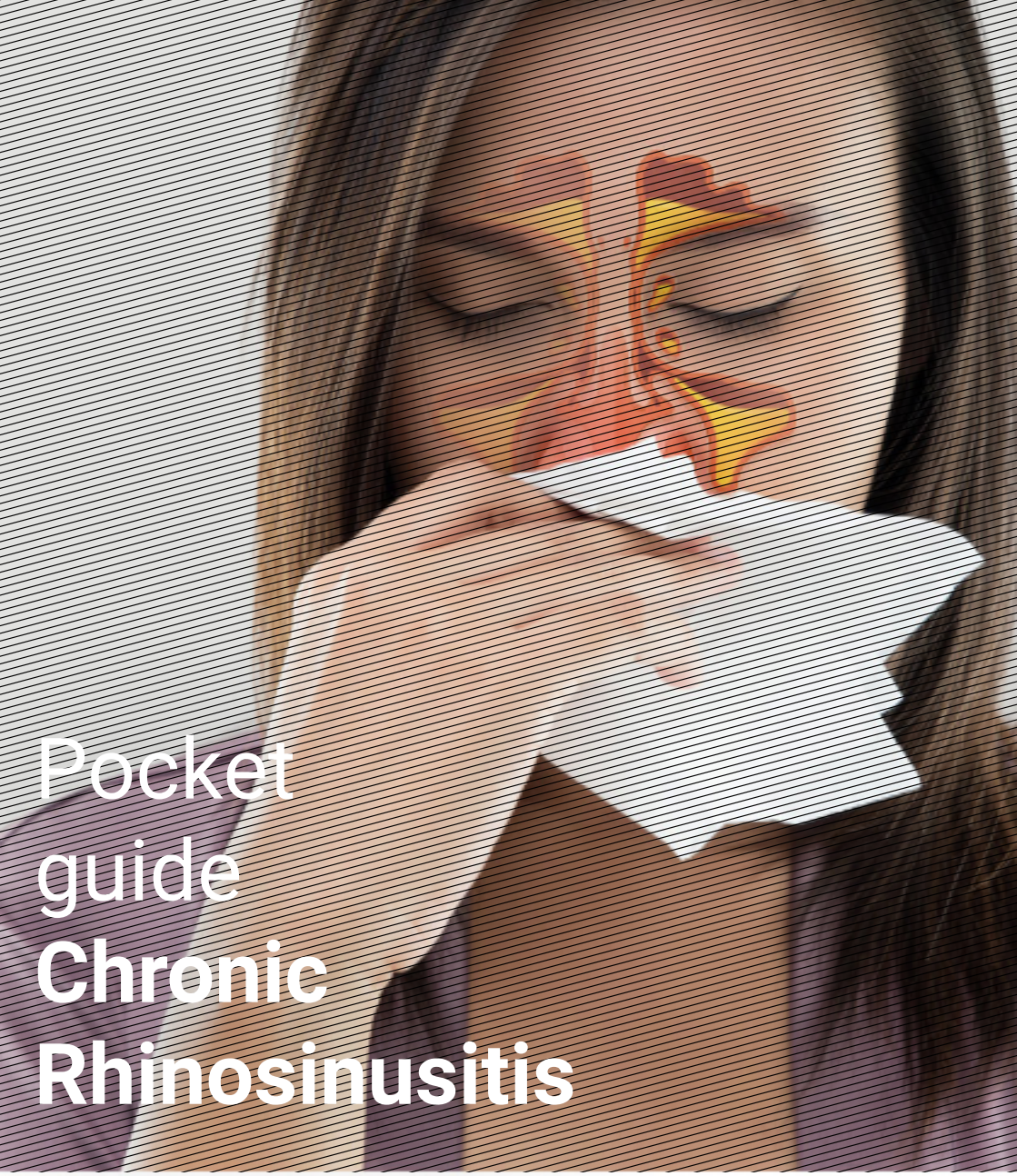
This manuscript contains online supplementary material



Pocket guide **Chronic Rhinosinusitis**

DEVELOPED BY EUFOREA EXPERT TEAMS
BASED ON INTERNATIONAL GUIDELINES

EUFOREA

What is Chronic Rhinosinusitis (CRS)?

Chronic rhinosinusitis is an inflammation of the inner lining of the nose and paranasal sinuses for over 3 months, giving rise to 2 or more (sino)nasal symptoms, with negative impact on patients' quality of life and high socio- economic burden.

CRS affects around 5% of the total European adult population, and is associated with increased risk of developing asthma.

What should the physician do?

- ✔ Ask about symptoms suggestive for CRS , medical history of the patient and any medication being taken
- ✔ Define the severity of disease on VAS or SNOT-22 scale
- ✔ Perform anterior rhinoscopy (all) and nasal endoscopy (ENT)
- ✔ Ask about history of allergies, asthma, atopic dermatitis and aspirin sensitivity
- ✔ Confirm suspicion of allergy by skin prick test or serum IgE
- ✔ Confirm suspicion of asthma with lung function tests

When to suspect asthma/chronic bronchitis?

Questions to your patient

- ☐ Have you had an episode or recurrent episodes of wheezing?
- ☐ Do you have a troublesome cough, especially at night/during awakening/exercise?
- ☐ Do you cough or wheeze after exercise?
- ☐ Do you produce sputum every day?
- ☐ Do you experience extended common cold/laryngitis/bronchitis?
- ☐ Does your chest feel tight or do you feel impaired breathing out?

If **YES** to any question: your patient should be evaluated by pulmonary function tests (PFTs) and referral to a chest physician advised.

Symptoms suggestive of CRS	Symptoms less suggestive of CRS
• Nasal congestion / obstruction • Nasal secretions (rhinorrhoea and/or post-nasal drip) • Smell dysfunction (hyposmia or anosmia) • Facial pain / headache	• Unilateral symptoms • Nose bleeding • Sneezing • Watery rhinorrhoea • Runny nose at night • Itchy nose and/or conjunctiva

How to apply the visual analogue scale (VAS)?

Ask your patient to mark on the horizontal line of 10 cm how bothersome his/her symptoms are. The ends of the horizontal line are defined as the extreme limits of the burden of disease. VAS has been validated for use on smartphones. [4]

*VAS- score is categorised in **mild** (0-3 cm), **moderate** (>3-7 cm), and **severe** (>7-10 cm)*

Fokkens WJ et al. European Position Paper on Rhinosinusitis and Nasal Polyps 2020. Rhinology. 2020 Feb 20;58(Suppl S29):1-464. doi: 10.4193/Rhin20.600. PMID: 32077450.

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Diagnosis of Smell Dysfunction

History of smell loss:

- hyposmia or anosmia or parosmia
- uni/bilateral, onset, duration, progress, association with taste dysfunction
- exclude acute causes of olfactory dysfunction such as post-viral e.g. COVID infection

+

ENT specialist: nasal endoscopy and smell testing

Value of NASAL ENDOSCOPY

- full evaluation of endonasal status: anatomy, secretions, mucosa, ostiomeatal complex and nasopharynx, specific pathology e.g. nasal polyps
- exclusion of other sinonasal conditions (e.g. neoplasm)

→ Ideal for **diagnosis** and **follow-up** of CRS care, including NP scoring

When to consider a CT scan ?

Diagnostic purpose in case of:

- ☐ suspicion of CRS in absence of nasal endoscopy
- ☐ discrepancy of symptoms and nasal endoscopy
- ☐ suspicion of benign / malignant lesion (unilateral and/or progressive symptoms
- ☐ suspicion of orbital or intracranial complicatons
- ☐ pre-operative setting

→ **NOT** for follow-up of therapy or routine diagnosis of CRS

Diagnosis of Nasal Obstruction

History of nasal obstruction: uni/bilateral, duration, progress, continuous vs intermittent, VAS score

+

Clinical exam: inspection in rest and during inspiration, anterior rhinoscopy, nasal tip support and nasal valve function

+

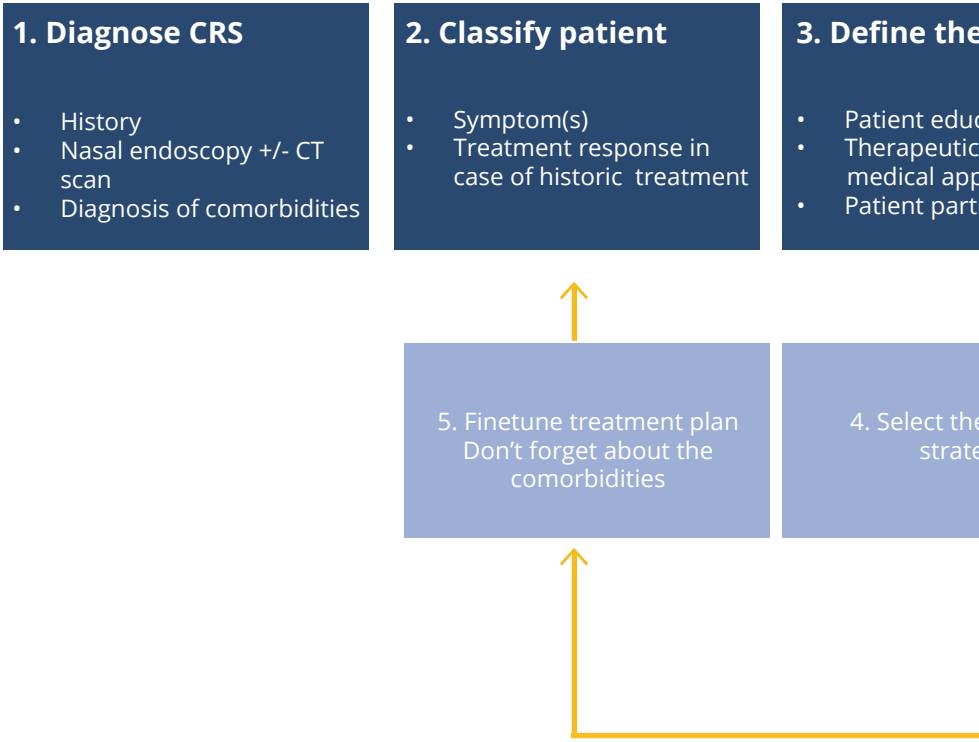
ENT specialist: nasal flow testing: peak nasal inspiratory flow, anterior rhinometry and/or acoustic rhinometry, nasal endoscopy

When to refer to a COLLEAGUE ?

Specialist in:

- **ENT** → persistent CRS symptoms despite first-line care
- **Rhinology / Sinus surgery** → persistent CRS symptoms despite second-line care
- **Pulmonology** → comorbid asthma , COPD or aspirin/NSAID intolerance
- **Immunodeficiencies / Allergology** → suspicion of immunodeficiencies or need for AIT
- **Dermatology** → comorbid AD
- **Ophthalmology** → orbital pain or (unilat/bilat) ocular symptoms
- **Neurology** → headache that cannot be explained by CRS / CT scan findings
- **Odontology** → comorbid periodontitis, temporomandibular joint dysfunction or biting disorders
- **Psychiatry** → functional disorders, psychiatric disorders
- **General practitioner** → work-related disorders, coordination of the treatment and related diseases

How to use the CRS pocket guide in 5 steps



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cation
plan including
proach
nership

4. Select therapeutic strategy

- Lifestyle
- Pharmacotherapy
- Surgical technique

5. Activate treatment

- Education on expected outcomes
- Personalised follow-up

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egy

3. Redefine diagnosis and elaborate personalised treatment plan

2. Reclassify patient

6. Patient follow up

Personalized treatment based on

- treatment response
- long-term plan
- patient needs

CRS Clinical Presentation

FIRST LINE CARE
Primary Care/Pharmacist

Educate patient ab
avoidance of infectious, c

At every stage give basic main

Step 1

2 or more symptoms suggestive of CRS for > 3 months

- Nasal congestion
- Nasal secretions
- Smell dysfunction
- Facial pain / headache

Basic maintenance therapy:

saline rinses

and/or

nasal corticosteroid spray or drops

3 mon

Ea
ca
fla

Step 2

Failure of previous treatment attempts (Step 1)

OR

Severe CRS

Referral to secondary care

Diagnosis of CRS (incl. Nasal Endoscopy or CT)

Screening for comorbidities (and treatment if necessary)

Step 3

Failure of previous treatment attempts (Step 2)

OR

Uncontrolled severe CRS

Referral to tertiary care
Endotyping by nasal endoscopy, blood tests and,

Diagnosis + specific therapy of secondary CR
Criteria for biologicals by EUFOREA

Comorbid asthma / AD / allergies

*Red flags: Periorbital oedema, displaced globe, double
signs of meningitis, neurological signs, unilateral symp

SECONDARY CARE
ENT - specialist/Allergologist

TERTIARY CARE
Rhinologist/Pulmonologist

out chronicity of disease, need for optimal adherence and
occupational, and environmental triggers e.g. by wearing a mask

tenance therapy: Saline rinses and/or nasal corticosteroid spray or drops

PATIENT PARTICIPATION IN TREATMENT PLAN

ths: VAS ≥ 5

rly referral in se of any red gs*!

Basic maintenance therapy
(step 1)
+
Oral corticosteroids and/ or antibiotics

if no improvement

ESS (Endoscopic Sinus Surgery)

Early referral in case of any red flags*!

3-6 months:
- VAS ≥ 5
- SNOT ≥ 40

Basic maintenance therapy
(step 1)
+

Type 1	Type 2
• long-term AB	• biologics
• xylitol	• aspirin desensitization in case of N-ERD
• steroid eluting implants	
• revision surgery	• revision surgery

/or histology

S (Ig deficiency, vasculitis)

Treatment of co-morbidities

e vision, opthalmogplegia, reduced visual acuity, severe headache, frontal swelling, signs of sepsis, toms, bleeding, crusting, cacosmia

Sinus Surgery (primary / revision)

PRO

- Good outcomes
- Benefits on upper and lower airways
- Better delivery of post-operative intranasal therapy

CON

- Delicate surgery under general (or local) anaesthesia
- Post-operative healing may take several months
- Long-term medical care and post-operative follow-up needed in most patients

Oral Corticosteroids

PRO

- Rapid and major effect on CRS symptoms and severity
- Effective on CRS and comorbidities
- Cheap

CON

- Short-term treatment and short-lasting benefits
- Adverse events if long-term/repeated use and/or contra-indicated in some medical conditions

Biologics

PRO

- Benefits on upper and lower airways
- Long-term treatment with good outcomes
- Availability of different biologics

CON

- High cost
- Not universally available

Additional Resources:

SNOT 22 &
EPOS 2020 Criteria of Control

EUFOREA instructional videos
for patients

Abbreviations

AD: Atopic dermatitis
AIT: Allergen immunotherapy
CRS: Chronic rhinosinusitis
CT: Computed tomography scan
EPOS: European Position Paper on Rhinosinusitis and Nasal Polyps
N-ERD: NSAID-exacerbated respiratory disease
NE: Nasal endoscopy
NP: Nasal polyps
NSAID: Non-steroidal anti-inflammatory drugs
PFT: Pulmonary function test
SNOT-22: Sinonasal outcome test

Vision

EUFOREA is an international non-profit organization forming an alliance of all stakeholders dedicated to reducing the prevalence and burden of chronic respiratory diseases through the implementation of optimal patient care via education, research and advocacy.

Mission

Based on its medical scientific core competency, EUFOREA offers a platform to introduce innovation and education in healthcare leading to optimal patient care.

EUFOREA

www.euforea.eu