Information leaflet and decision aid for antibiotic treatment in the case of acute sinusitis / acute rhinosinusitis

This document, made for physicians, summarizes key research data that can be used to share decision-making with the patient.

Epidemiology

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- Prevalence of acute rhinosinusitis (**ARS**) is approximately 6%-15% (1 in 8 adults). ARS is the fifth most common diagnosis for which antibiotics are prescribed.[1-3,24]
- Viral ARS incidence is very high, at 2-5 episodes/person per year.[3]

Classification:

- ARS is a symptomatic inflammation of the paranasal sinuses AND nasal cavity. It includes 2 symptoms: 1) nasal congestion or discharge; 2) (optional) facial pain, feeling of pressure, or reduction or loss of smell. ARS often overlaps with other clinical conditions like infectious cough, sore throat or hoarseness.[4,5] Symptoms may last up to 4 weeks.[6]

Pathogenesis:

- Bacterial complications of an ARS-infection are rare: 0.5-2% in adults and 5-13% in children.[1,2,7,8]

Viral[3]: **98-99.5%**

- Rhinovirus (50%)
- Adenovirus
- Coronavirus (even SARS-CoV-2)
- Influenzavirus

Bacterial[2,8,9]: **0.5-2%** (adults), **5-13%** (children)

- S. pneumoniae (38%)
- H. influenzae (36%)
- M. catarrhalis (16%)
- S. aureus

Clinical presentation[1-3,8,10,11]

Symptoms:

- Nasal obstruction / discharge
- Pain / pressure / fullness

Optional:

- Fever, headache, coughing

Findings in clinical examination:

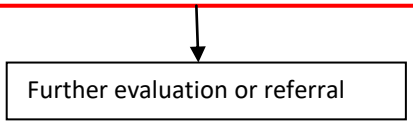
- Purulent nasal discharge / secretion
- Purulent posterior pharyngeal secretion

Complications (3:1,000,000/year[3] to 1:32,000 in adults[8]):

- Orbital cellulitis
- Osteomyelitis
- Intracranial abscesses
- Venous sinus thrombosis

Red flags[2,8,10,12]

- Eye signs: - periorbital swelling or edema
  - double vision and/or reduced visual acuity
  - displaced globe
  - ophthalmoplegia
- Frontal swelling / palpable cheek
- Severe headache (uni- or bilateral)
- Signs of meningitis (neck stiffness, photophobia) or sepsis
- Neurological signs



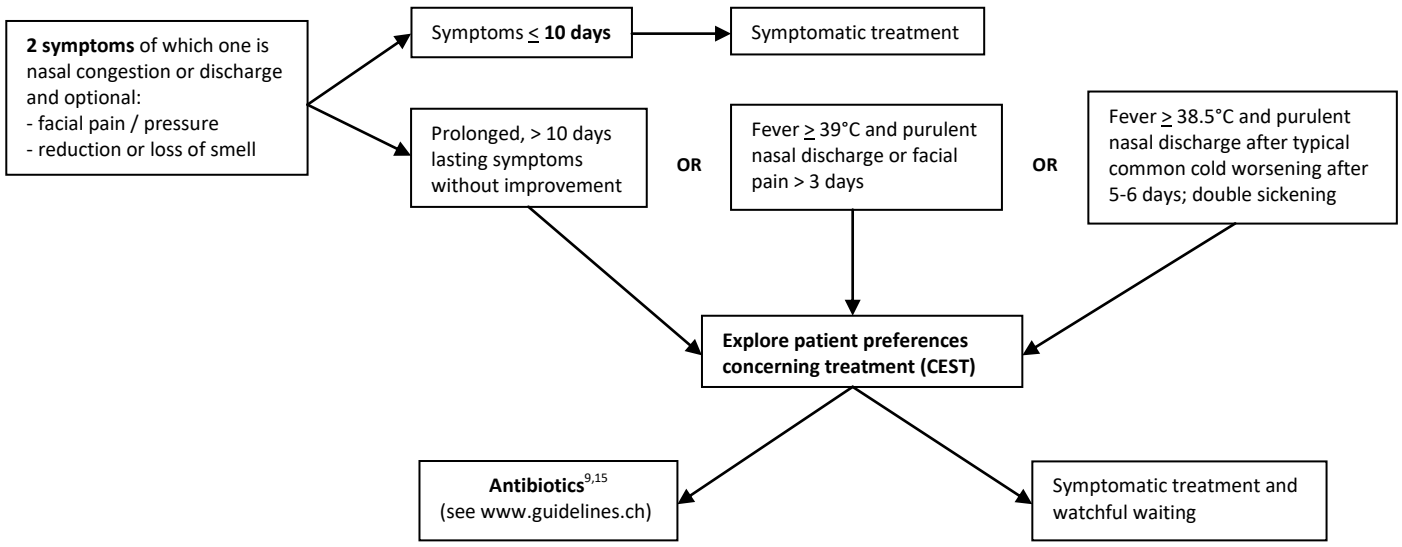
Differential diagnoses[7,12]

- Allergic rhinitis
- Facial pain syndromes or orodental disease
- Nasal foreign body (particularly in children)

Diagnostics

Diagnostics[3,7,10,11,14,15]

- The diagnosis of ARS is clinical and includes the sudden onset of symptoms like nasal obstruction, rhinorrhea, hyposmia and facial pain / pressure. Purulent discharge is not necessarily a sign of bacterial infection.
- There's no need for complementary lab tests like CRP, blood count, or cultures in uncomplicated ARS (see decision tree).[3]



Treatment options

Symptomatic treatment

1. Symptomatic treatment

Evidence on treating acute rhinosinusitis with analgesics, intranasal corticosteroids, and saline nasal irrigation is poor.

- Nasal lavage with saline irrigation[1,2,8]
- Analgesics (paracetamol or NSAID)[1,2,8]
- Decongestants briefly relieve nasal congestion.[1]
- Topical intranasal corticosteroids[1,2,16] offer minor relief from nasal congestion and discharge after 14 days of treatment. Their effect increases with time and dose.[16,18]
- Oral steroids provide a small benefit in reducing pain, nasal congestion, or discharge (RR 1.4, 95% CI 1.08 to 1.81) if combined with antibiotics.[19]
- Phytotherapeutics: Pelargonium sidoides, Sinupret, or Myrtol may relieve symptoms, based on little evidence.[2,20]

ARS (regardless of whether viral or bacterial) lasts 2-3 weeks on average.[11] Spontaneous healing rates are > 50% after 1 week, 60-80% after 2 weeks, and > 90% after 4 weeks.[10]

Antibiotic treatment

2. Antibiotic treatment

- **Advantages**: After **5 days**, ***9*** *more out of 100* people will be symptom-free if they take antibiotics (NNT 11). After **14 days**, ***5*** *more out of 100 people* will be symptom-free if they take antibiotics (NNT 20).[1,6]
- **Disadvantages / risks**: Adverse effects like diarrhea, nausea, vomiting, abdominal pain, headache, photosensitivity in 25-28%.[6,21]
- Antibiotics do not prevent complications (orbital cellulitis, osteomyelitis, intracranial abscesses, venous sinus thrombosis).[3,17]
- Risk factors for complications or developing antibiotic resistance: living in regions with penicillin-resistant S. pneumoniae/ < 2 years or > 65 years old / clinical severe infection / immunosuppressants / multiple comorbidities / hospitalisation within the previous 5 days.[13,22]

Choice & dosage of antibiotics[14]

Adults:

- **Amoxicillin 1g/12h** or **1g/8h** per os for **5-7 days**
- Special situations: Immunosuppressants / severe cases of ethmoidal, frontal, or sphenoidal sinusitis / patients who don't respond within 72 hours to amoxicillin alone: **Amoxicillin-clavulanate 2g/12h** per os.
- In case of allergy to penicillin and: - no contraindication for cephalosporins: **Cefuroxim 500mg/12h** per os.
  - contraindication for all beta-lactam antibiotics: **Doxycyclin 100mg/12h** per os.
  (CAVE: contraindicated in pregnancy)

Children:

- **Amoxicillin 25mg/kg/12h** per os for **10 (-14) days**
- Special situations: Immunosuppressants / severe cases of ethmoidal, frontal or sphenoidal sinusitis / age < 2 years / antibiotics in the last month / patients who don't respond within 72h to amoxicillin alone: **Amoxicillin-clavulanate 40mg/kg/12h** per os.
- In case of allergy to penicillin and: - no contraindication for cephalosporins: **Cefuroxim 15mg/kg/12h** per os.
  - contraindication for all beta-lactam antibiotics: **Clarithromycin 7.5mg/kg/12h** per os.

Advantage of reducing the rate of antibiotic prescription:

- Will not promote antibiotic resistance in bacteria. Avoids possible adverse effects of antibiotic prescription.
- Immediate antibiotic treatment creates an expectation in patients that they will need antibiotic treatment when they have infectious diseases.[23]

References: see https://www.biham.unibe.ch/research/tools_to_facilitate_shared_decision_making/index_eng.html