

## SINUSITIS/RHINOSINUSITIS

### 1. Medical Condition

Sinusitis refers to inflammation of the sinuses only while the more clinically relevant term should be Rhinosinusitis which refers to inflammation of both the sinus and the nasal mucosa. Rhinosinusitis is a frequently occurring disease, with significant impact on athletic performance in both competition and training. There are two types of rhinosinusitis: acute bacterial rhinosinusitis (ABRS) and chronic rhinosinusitis (CRS).

### 2. Diagnosis

#### A. Medical History

ABRS is a clinical diagnosis with upper respiratory tract infection (URTI) signs and symptoms of more than 7 days duration without improvement or improvement which is then followed by worsening. The two main causative agents of ABRS are *Streptococcus pneumoniae* and *Haemophilus influenzae*.

CRS is an inflammatory disease involving the nasal mucosa and paranasal sinuses. Symptoms of CRS are usually of lesser intensity than those of ABRS, but their duration exceeds the 4 weeks commonly used as the upper limit for the diagnosis of ABRS. The main bacterial causative agents of CRS are *Streptococcus pneumoniae*, *Haemophilus influenzae* and anaerobes, but CRS can also be related to allergy, nasal polyps, mechanical factors or without obvious cause. A diagnosis of CRS is probable if 2 or more major symptoms are present for at least 12 weeks along with objective documentation of inflammation of the paranasal sinuses or nasal mucosa by either sino-nasal endoscopy or by CT scan.

#### B. Diagnosis Criteria

##### **ABRS Symptom Table**

Facial Pain/pressure/fullness

Nasal Obstruction

Nasal or postnasal purulent Discharge

Smell: Hyposmia/anosmia

The diagnosis of ABRS requires the presence of  $\geq 2$  PODS symptoms, one of which must be O or D, and symptom duration of >7-10 days without improvement or worsening after initial improvement of symptoms (Desrosiers et al, 2011).

The diagnosis is based on history and physical examination. Nasal culture and sinus aspirates are not necessary. Radiological imaging is not required for uncomplicated ABRS.

## Chronic Rhinosinusitis (CRS)

CRS is diagnosed on clinical grounds but must be confirmed with at least 1 objective finding on endoscopy or computed tomography (CT) scan.

### CRS Symptom Control

Facial **C**ongestion/fullness

Facial **P**ain/pressure/fullness

Nasal **O**bstruction

Nasal purulence/discolored postnasal **D**ischarge

Smell: Hyposmia/anosmia

A diagnosis requires at least 2 CPODS present for 8-12 weeks, plus documented inflammation of the paranasal sinuses or nasal mucosa. CRS is a clinical diagnosis and must be confirmed with at least 1 objective finding such as nasal purulent nasal polyposis, on endoscopy or sinus opacification on CT scan. Objective testing is necessary to rule out the differential diagnosis of migraine, dental abscesses, allergic rhinitis and atypical facial pain syndromes.

## 3. Good Medical Practice

### General principles

For viral and bacterial rhinosinusitis of mild or moderate intensity, analgesics, topical intranasal glucocorticoids, and nasal saline irrigation may be used for symptomatic relief. Watchful waiting (without antibiotics) or initial antibiotic therapy for adults should be chosen depending of the evolution of symptoms. Patients with severe symptoms, or with underlying medical conditions conferring reduced immunity or an increased risk of complications (e.g., congestive heart failure) should be treated with antibiotics as part of initial management and also assessed for presence of complications.

### Non-Prohibited Treatments

- Ensure adequate hydration.
- Antibiotics: First-line recommended therapy remains amoxicillin, which should be effective in most cases. For patients with an increased risk of resistance as suggested by antibiotic use within the past 3 months or symptoms unresponsive to treatment, second line therapy such as amoxicillin / clavulanate or doxycycline may be considered. Second line fluoroquinolones may be useful in cases of bacterial resistance or complication. However, these present an increased risk of tendonitis or achilles tendon rupture, particularly in patients receiving repeated courses, so these should be used with caution in competitive athletes. Anaerobe coverage in CRS is recommended.
- Intranasal glucocorticoids may help improve resolution rates and improve symptoms.
- Analgesics such as acetaminophen/paracetamol or non-steroidal anti-inflammatories may provide symptom relief.
- A few other oral decongestants are not prohibited (e.g. phenylephrine).

- Saline irrigation sprays or drops.
- Topical nasal decongestants formulations such as Xylometazoline or Oxymetazoline may also provide symptom relief.
- Mucolytics, anti-histamines and leukotriene modifiers may be helpful in CRS
- Referral to an otorhinolaryngologist (ENT surgeon) should occur if nasal polyps are present.
- Surgery may be beneficial and indicated for athletes who have failed medical therapy
- Allergy testing may be indicated for those athletes with CRS who may have an atopic component.

#### 4. Prohibited treatments

##### A. Pseudoephedrine:

The use of oral decongestant (pseudoephedrine) (PSE) and 1<sup>st</sup> generation (sedating) anti-histamine combination (if available) is mainly reserved for bouts of acute exacerbations of sinusitis. An athlete with well-managed CRS should not have a regular need for the administration of PSE. Please note that PSE is effectively prohibited “in-competition” only (see Caution below). A TUE is not required for out-of-competition use.

- Route: Oral
- Frequency: As indicated on the manufacturer’s label.
- Antihistamine preparations are not prohibited
- Although each case must be judged individually, it would be highly unlikely for a TUE to ever be granted for suprathreshold dosages of PSE as other reasonable treatment alternative exist.
- Recommended duration: Up to 4 weeks as needed for symptom control.

**CAUTION:** Pseudoephedrine is prohibited in-competition at a urinary concentration above the threshold of 150µg/mL (as of January 1, 2010). The threshold level has been established based on the intake of therapeutic doses of PSE, defined as a maximum daily dose of 240mg PSE taken either as:

- 4 daily administrations (one every 4-6 hours) of a 60mg pill (or 2x30mg pills), or
- 2 daily administrations (one every 12 hours) of a 120mg pill (extended release), or
- 1 daily administration of a 240mg pill (extended release). The TUE application should demonstrate the presence of the condition as evidenced by history and physical examination in addition to failed trials of other non -prohibited substances.

Although rare, it is possible that the established threshold level may be reached by some individuals taking therapeutic dosages, particularly 6-20 hours after the extended release pill. Unless there is a TUE, WADA advises that athletes stop taking PSE pills 24 hours

before the in-competition period. However, it is unlikely that an athlete would ever need to take suprathreshold dosages and therefore need to request a TUE.

#### B. Systemic Glucocorticoids (GCs)

A short course of oral preparations of GCs: (eg. prednisone 30-40 mg) may be necessary in chronic rhinosinusitis (with or without polyps) either for initial control and early disease management, or for the treatment of recurrences or exacerbations. Ongoing treatment with systemic GCs is rare unless complicated nasal polyposis is present.

Systemic (including oral) GCs are prohibited in-competition only.

- Route: Oral
- Frequency: OD (Daily)
- Recommended duration: short finite period of time such as 4-7 days.
- If treatment of a longer duration is required for nasal polyposis, a referral to an otorhinolaryngologist (ENT surgeon) should occur.
- TUE requirements: A TUE is required for use of oral glucocorticoids in-competition. The application should demonstrate a clear diagnosis of chronic rhinosinusitis.

### 5. Consequences to Health if not treated

Failure to treat sinusitis or a failed response to treatment can lead to chronic cough, orbital complications or intracranial neurological complications including blindness, ophthalmitis, meningitis, brain abscess, or osteomyelitis.

### 6. Treatment Monitoring

Treatment should be monitored by the treating physician to ensure efficacy of the treatment regimen. In situations where an athlete is self-treating with over-the-counter medications, the athlete should monitor their own symptoms and stop treatment once their symptoms have resolved, or as per the manufacturer's or physician's directions.

### 7. TUE Validity and Recommended Review Process

A TUE is required for the use of pseudoephedrine and for systemic glucocorticoids in competition only. As treatment of sinusitis tends to be short term, the TUE duration is also short in duration.

### 8. Any Appropriate Cautionary Matters

An athlete that fails to respond to therapy or with severe symptoms, should be referred to an otolaryngologist specialist for investigation of other underlying conditions. Warning symptoms and signs include:

- Unusual severe symptoms
- Systemic toxicity
- Altered mental status
- Severe headache
- Swelling of the face, orbit or change in visual acuity

## 9. References

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