CLINICAL PRACTICE GUIDELINE: Emergency Department

Acute Rhinosinusitis

Disclaimer: This Clinical Practice Guideline ('CPG') was written for use in The Royal Victorian Eye and Ear Hospital Emergency Department. It should be used under the guidance of an Ophthalmology or ENT registrar. If clinical advice is required, please contact the Eye and Ear Admitting Officer for assistance: EYE: +61 3 9929 8033; ENT: +61 3 9929 8032. Links to internal Eye and Ear documents cannot be accessed from the website CPG.

Description:

Acute rhinosinusitis (ARS) is inflammation of the mucosa of the nasal cavity and paranasal sinuses of short duration (<12 weeks), with resultant oedema and obstruction of paranasal sinus drainage. It commonly begins as a viral upper respiratory tract infection, however, it may be bacterial or fungal in origin. ARS may be complicated by orbital, intracranial or osseous disease.

Red Flags:

- Suspect associated orbital cellulitis: periorbital oedema, decreased visual acuity, decreased colour vision, relative afferent pupillary defect (RAPD), double vision and ophthalmoplegia, proptosis
- If unilateral consider tumour, fungal sinusitis or dental aetiology
- Symptoms and signs of neurological deficits e.g. confusion, reduced level of consciousness,
- Meningitis (nuchal rigidity, photophobia, fever)
- Be aware of potential rapid deterioration in the presence of systemic comorbidities (e.g. type 1 diabetes mellitus, immunosuppression)

How to Assess:

Acute bacterial rhinosinusitis (ABRS) as per European Position Paper on Rhinosinusitis and Nasal Polyps (EPOS) 2020 definition

At least 3 of the following:

1. Discoloured discharge
2. Severe local pain (often unilateral)
3. Fever > 38.0
4. Raised CRP/ESR
5. "Double sickening" -initial improvement and subsequent worsening

History:

- Commonly follows viral upper respiratory tract infection, with an increase in symptoms after 5 days or persistent symptoms for >10 days
- Risk factors: previous episodes of ARS or chronic sinusitis, concurrent or recent dental infection, procedures; past sinus surgery and nasal procedure, immunodeficiency, ciliary dysfunction, smokers
- Symptoms: malaise, fevers, nasal obstruction, nasal discharge, facial pain or pressure, change in smell, aural fullness, referred otalgia. May present as cough in paediatric population

Differential diagnoses

- Allergic rhinitis
- Foreign body
- Sinonasal lesion
- Facial pain/headache syndromes (e.g. migraine)

Examination:

- Fever > 38.0
- Discoloured discharge
- Tenderness over sinuses
- Flexible nasoendoscopy (FNE): inflamed, oedematous nasal mucosa, purulent discharge
    - Assess for differential diagnoses (e.g. foreign body, sinonasal lesion)
    - If 'Red Flags' present, seek urgent ENT and ophthalmology opinion

Investigations

- Blood tests usually not required, however in diabetic or unwell patients FBC, UEC, ESR, CRP, venous blood gas (VBG) and BSL should be ordered
- CT paranasal sinuses is not routinely recommended in acute rhinosinusitis, with the exception of:
    - Immunocompromised patients
    - Inadequate response to medical therapy or recurrent acute rhinosinusitis
    - Alternative diagnosis suspected
- If suspect neurological complications arrange CT sinuses and brain with contrast
- If suspect orbital complications arrange CT sinuses and orbits with contrast

Acute Management:

Immunocompromised and septic patients

- Resuscitate as indicated
- Commence on IV antibiotics as per complicated acute bacterial rhinosinusitis
- Urgent ENT referral, initiate transfer to general hospital

Uncomplicated acute viral rhinosinusitis (common cold, post-viral rhinosinusitis):

- Supportive therapy: paracetamol and NSAIDs, short-term decongestant sprays (e.g. oxymetazoline, pseudoephedrine), sinus saline irrigation (e.g. FLO® sinus rinse). May consider vitamin C and zinc supplementation
- Antibiotic therapy is not indicated (no significant benefit and associated with adverse events)
- Use of intranasal corticosteroid is not indicated for acute rhinosinusitis, unless pre-existing chronic rhinosinusitis

Acute Bacterial Rhinosinusitis (ABRS) (see diagnostic criteria above)

- Supportive therapy (as above)
- Consider oral antibiotic therapy:
    - Amoxicillin 500mg (child: 15mg/kg up to 500mg) oral, 8-hourly for 5 days
    - If ongoing symptoms, increase duration of antibiotic therapy to 10 days
    - If adherence to 8 hourly regimen is unlikely, a 12 hourly regimen can be used instead: amoxicillin 1g (child: 30mg/kg up to 1g) oral 12 hourly

If a course of amoxicillin within last month, consider changing antibiotic therapy to amoxicillin+clavulanate (Augmentin Duo Forte)

- Amoxicillin+clavulanate 875+125 mg (child 2 months or older: 22.5+3.2 mg/kg up to 875+125 mg) oral, 12-hourly for 5 days

In cases of **non severe** hypersensitivity to penicillin, use:

- Cefuroxime 500mg (child 3 months or older: 15mg/kg up to 500mg) oral, 12-hourly for 5 days (non severe hypersensitivity)

For patients with **severe** hypersensitivity to penicillin, use:

- Doxycycline oral, 12-hourly for 5 days, dose as follows:
    - Adult: 100mg
    - Child 8 years or older:
        - Less than 26kg - 50mg

        - 26-35 kg - 75mg
        - More than 35kg - 100mg
    - Child younger than 8 years (or requiring an oral liquid formulation): trimethoprim+ sulfamethoxazole (child 1 month or older) 4+20 mg/kg up to 160/800 mg oral, 12-hourly for 5 days

If patient is not improving and uncomplicated ABRS remains the likely diagnosis, consider increasing the duration of antibiotic therapy to 10 days.

If treating with amoxicillin and patient has had amoxicillin in the last month, consider changing antibiotic therapy to amoxicillin+clavulanate (infection may be due to beta-lactamase producing strain of *H.influenzae* or *M. catarrhalis*; adding clavulanate will increase activity against these pathogens:

- Amoxicillin+clavulanate 875+125 mg (child 2 months or older: 22.5+3.2 mg/kg up to 875+125mg) orally, 12-hourly for 5 days

Complicated ABRS (e.g. orbital or neurological) suspected

- Flucloxacillin 2g (child: 50 mg/kg up to 2g) IV, 6 hourly and ceftriaxone 2g (child: 50mg/kg up to 2g) IV, 12 hourly
- Urgent ENT referral, consider ophthalmology referral in orbital complications
- If there is a substantial amount of facial pain, swelling of nasal mucosa or in a suspected acute exacerbation of chronic rhinosinusitis with nasal polyps (CRSwNP), consider oral prednisolone (50mg for 2 days then 25 mg for further 3 days) in discussion with the ENT registrar

Follow up:

- GP or AENT follow up in 7 to 10 days
- Rhinology Clinic if ≥ 3 episodes of acute bacterial rhinosinusitis in last 12 months

Additional notes:

Chandler classification of orbital complications of acute rhinosinusitis (based upon clinical and radiological findings)

- Stage 1: Pre-septal cellulitis
- Stage 2: Orbital cellulitis
- Stage 3: Subperiosteal abscess
- Stage 4: Orbital abscess
- Stage 5: Cavernous sinus thrombosis

Evidence Table

Author(s)	Title	Source	Level of Evidence (I – VII)
Fokkens W, Lund V, Hopkins J, et al.	EPOS 2020: European Position Paper on Rhinosinusitis and Nasal Polyps 2020	Rhinology. 2020; Suppl. 29:1-464.	I
Rosenfeld R, Piccirillo J, Chandrasekhar, S et al.	Clinical Practice Guideline (Update): Acute Sinusitis	Otolaryngol Head Neck Surg. 2015; 152(2S): S1-S39	I
Bayonne E, Kania R, Tran P, et al.	Intracranial complications of rhinosinusitis. A review, typical imaging data and algorithm of management	Rhinology. 2009; 45:59-65	VI
Kenealy T, Arroll B.	Antibiotics for the common cold and acute purulent rhinitis	Cochrane Database Syst Rev. 2013: CD000247	I
Hayward G, Thompson M, Perera R, et al.	Corticosteroids for the common cold	Cochrane Database Syst Rev. 2015; CD008116	I
Rosenfeld R	Acute Sinusitis in Adults	N Engl J Med. 2016; 375: 962-70	VII
Aring A, Chan M.	Current Concepts in Adult Acute Rhinosinusitis	Am Fam Physician. 2016; 94(2):97-105	VII
The Royal Children's Hospital, Melbourne, Australia	Clinical Practice Guideline on 'Periorbital and orbital cellulitis'	Available from https://www.rch.org.au/clinicalguide	VII

The Hierarchy of Evidence

The Hierarchy of evidence is based on summaries from the National Health and Medical Research Council (2009), the Oxford Centre for Evidence-based Medicine Levels of Evidence (2011) and Melynk and Fineout-Overholt (2011).

I) Evidence obtained from a systematic review of all relevant randomised control trials.

II) Evidence obtained from at least one well designed randomised control trial.

III) Evidence obtained from well-designed controlled trials without randomisation.

IV) Evidence obtained from well-designed cohort studies, case control studies, interrupted time series with a control group, historically controlled studies, interrupted time series without a control group or with case series.

V) Evidence obtained from systematic reviews of descriptive and qualitative studies.

VI) Evidence obtained from single descriptive and qualitative studies.

VII) Expert opinion from clinician, authorities and/or reports of expert committees or based on physiology.

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