IAEM Clinical Guideline

Periorbital and Orbital Cellulitis (Adults and Paediatrics)

Version 2

April 2022

Authors: Dr Ken Au Yong, Dr Karen Harris

Reviewed by: Mr Tim Fulcher, Consultant Ophthalmic Surgeon

DISCLAIMER

IAEM recognises that patients, their situations, Emergency Departments and staff all vary. These guidelines cannot cover all clinical scenarios. The ultimate responsibility for the interpretation and application of these guidelines, the use of current information and a patient's overall care and wellbeing resides with the treating clinician.
## GLOSSARY OF TERMS

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS</td>
<td>Central nervous system</td>
</tr>
<tr>
<td>ED</td>
<td>Emergency Department</td>
</tr>
<tr>
<td>RAPD</td>
<td>Relative Afferent Pupillary Defect</td>
</tr>
<tr>
<td>IV</td>
<td>Intravenous</td>
</tr>
<tr>
<td>FBC</td>
<td>Full Blood Count</td>
</tr>
<tr>
<td>CRP</td>
<td>C-reactive Protein</td>
</tr>
<tr>
<td>ENT</td>
<td>Ear, Nose and Throat</td>
</tr>
<tr>
<td>CT</td>
<td>Computed Tomography</td>
</tr>
<tr>
<td>PO</td>
<td>Per Os (by mouth)</td>
</tr>
</tbody>
</table>

**Children:** Patients aged from birth – date of 16th birthday  
**Adults:** Patients aged 16 years and older
Periorbital and Orbital Cellulitis

INTRODUCTION

Periorbital and orbital cellulitis describe infections of the soft tissues surrounding the globe of the eye. This term covers 2 distinct clinical entities, namely:

a. **Periorbital (Pre-septal) cellulitis**, i.e. infection anterior to the orbital septum.
   and

b. **Orbital (Post-septal) cellulitis**, i.e. infection posterior to the orbital septum.

The orbital septum is a fibrous tissue layer that extends from the periosteum of the orbital rim into the eyelids and provides an effective physical barrier against the spread of infection.

*Image 1: Diagram illustrating the location of the orbital septum [1]. Image used under Creative Commons use policy.*
**Periorbital (Pre-septal) cellulitis** is an infection confined to the anterior of the orbital septum. It can be caused by local spread from an existing eyelid or periorcular infection eg. stye, chalazion, dacryocystitis etc., trauma or upper respiratory tract infection.

**Orbital (Post-septal) cellulitis** occurs when the infection breaches the orbital septum or occurs posterior to it. The majority of cases originate from local paranasal sinus infection, but can also rarely be caused by trauma, intra-orbital foreign body or haematogenous spread. This condition represents an emergency as it can lead to serious complications including loss of vision, cerebral sinus thrombosis and CNS infection.
PARAMETERS

Target audience: Clinical staff working in an ED /acute paediatric assessment facility involved in the assessment of children or adults presenting with suspected periorbital or orbital cellulitis.

Patient population: Any patient presenting with features of suspected periorbital or orbital cellulitis. Infected eyelid lesions or dacyrocystitis are amongst the most common causes of pre-septal cellulitis and may need to be treated in the same way as mild pre-septal cellulitis.

Exclusion criteria: Patients presenting with other localised eye infections e.g. blepharitis/conjunctivitis.

AIMS

The aim of this document is to provide guidance to clinical staff involved in the first line assessment and management of adults and children presenting with features suggestive of periorbital or orbital cellulitis.
ASSESSMENT

**Presenting features**
- Normally unilateral eyelid swelling with pain and erythema
- Consider other causes (e.g. allergic reaction/periorbital oedema) if bilateral and painless

**Initial clinical assessment**
- Is the patient systemically unwell? If yes, start Adult/Paediatric Sepsis form and manage accordingly
- Assess for features suggestive of intracranial infection - drowsiness, new neurological deficit, meningism, irritability, unsteady gait, new incoordination, severe headache.

**Red Flags - if any present, treat as orbital cellulitis/severe preseptal cellulitis**
- Painful/restricted eye movements
- Reduced visual acuity
- RAPD
- Diplopia
- Proptosis
- Age < 3 months
- Significant eyelid swelling - unable to fully examine eye

Figure 1: Suggested assessment flow for patients presenting with suspected periorbital cellulitis

If no evidence of sepsis/intracranial infection/red flags; assess for **features of mild peri-orbital (pre-septal) cellulitis**. **All criteria must be met.**
- Minimal swelling
- Able to fully examine eyes
- Sclera is white
- Normal eye movements
- Systemically well, afebrile
SAMPLE IMAGES OF PRESEPTAL AND ORBITAL CELLULITIS

Please note that the images below are a representation of the features of pre-septal and orbital cellulitis. They should not be relied upon solely to reach a diagnosis and each patient should be comprehensively evaluated clinically and with radiological studies as indicated.

![Image 2: Periorbital (Pre-septal) cellulitis [2]. Permission for use kindly granted by DFTB Skin Deep.](image2)

![Image 3: Orbital (post-septal) cellulitis [3]. Licence for use granted by the BMJ Publishing Group.](image3)

INVESTIGATIONS

**Mild periorbital (pre-septal) cellulitis:** None required

**Patient with presence of ‘red flags’:**

- IV access- Blood cultures, FBC, Renal profile, CRP
- Nasal swab for culture and sensitivity (or sinus swab if endoscopy planned by ENT team)
- Neuroimaging (contrast enhanced CT of Orbits, Sinuses +/- Brain)
MANAGEMENT

### Table 1: Suggested antimicrobial management of periorbital infections

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PO Co-amoxiclav or PO Cefalexin for 10-14 days</td>
<td>Refer to local antimicrobial guidelines</td>
<td></td>
</tr>
<tr>
<td>Ensure adequate analgesia, safety netting (advise on features of Red Flags in Figure 1 above)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Severe periorbital (pre-septal) cellulitis</th>
<th>IV Cefotaxime OR IV Ceftriaxone</th>
<th>Refer to local antimicrobial guidelines</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Orbital cellulitis suspected or confirmed on imaging</th>
<th>IV Cefotaxime OR IV Ceftriaxone and IV Metronidazole</th>
<th>Refer to local antimicrobial guidelines</th>
</tr>
</thead>
</table>

In patients requiring IV antibiotics, ensure:

- b. Children: Admission under General Paediatrics / ENT (depending on local resources and arrangements)
- c. Adults: Admission under Ophthalmology / ENT (depending on local resources and arrangements)
- d. Commencement of intranasal decongestant (Xylometazoline – dosing per BNF) if sinusitis is suspected as the source of infection
- e. 4 hourly eye (visual acuity, pupils and colour vision) and neuro-observation
REFERENCES


