

# Diagnostic Imaging Pathways - Sinusitis (Acute)

## Population Covered By The Guidance

This pathway provides guidance on the imaging of patients with acute sinusitis.

**Date reviewed: July 2014**

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## Quick User Guide

Move the mouse cursor over the **PINK** text boxes inside the flow chart to bring up a pop up box with salient points.

Clicking on the **PINK** text box will bring up the full text.

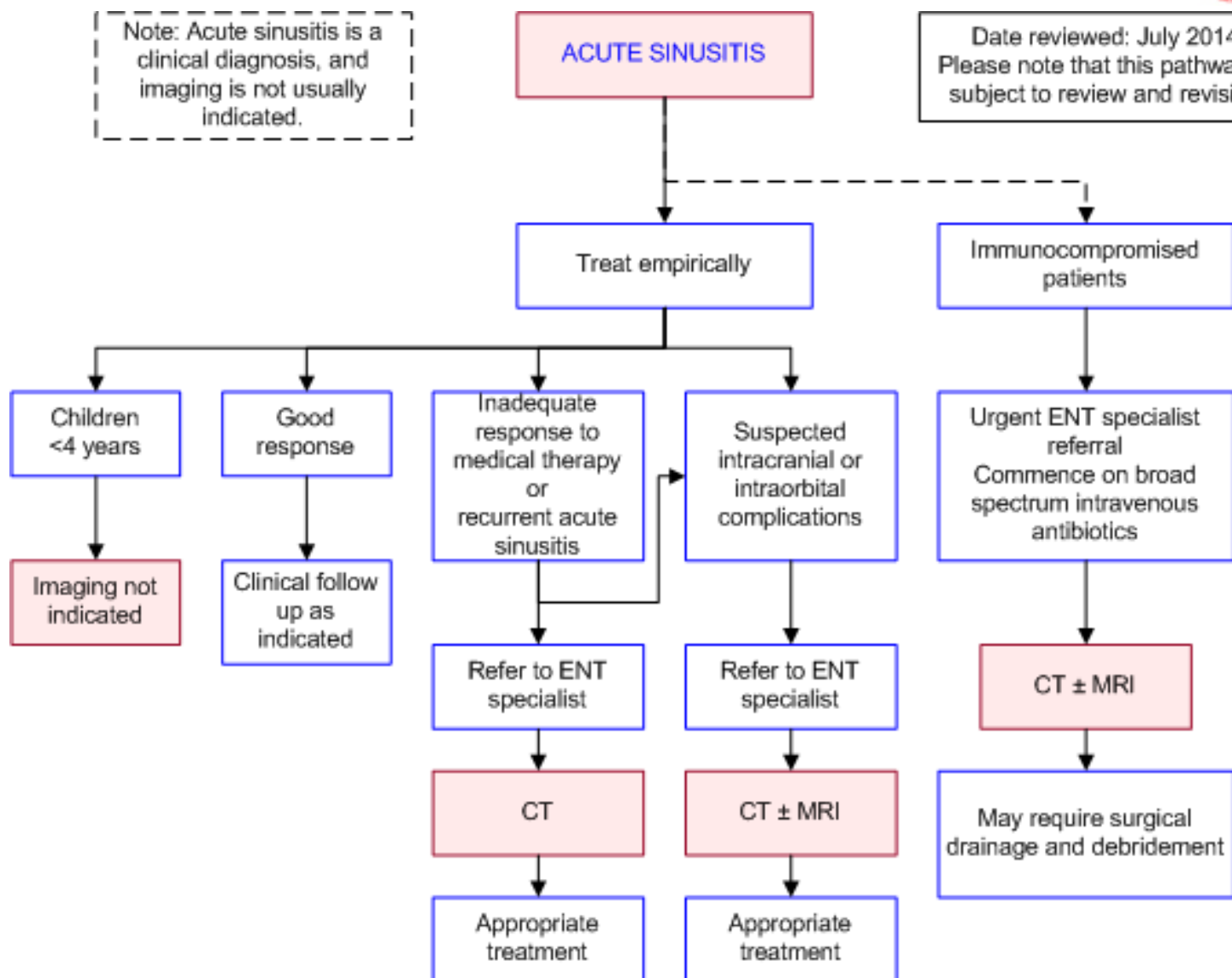
The relative radiation level (RRL) of each imaging investigation is displayed in the pop up box.

SYMBOL	RRL	EFFECTIVE DOSE RANGE
	None	0
	Minimal	< 1 millisieverts
	Low	1-5 mSv
	Medium	5-10 mSv
	High	>10 mSv

## Pathway Diagram

Note: Acute sinusitis is a clinical diagnosis, and imaging is not usually indicated.

Date reviewed: July 2014  
 Please note that this pathway is subject to review and revision



## Image Gallery

Note: These images open in a new page

1a



### Pansinusitis with Preseptal Cellulitis and Septal Abscess

Image 1a, b ,c and d (Computed Tomography): Gross preseptal and subcutaneous oedema affecting the right upper cheek and periorbital tissues. Mild right proptosis. Post-septal abscess seen between the lateral rectus and the postero-lateral aspect of the right globe. Pansinusitis with fluid levels within each sinus group indicating active suppuration. Numourous locules of gas within the subcutaneous oedema, the right orbit, and tracking through the right optic canal.

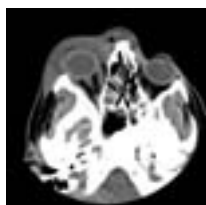
1b



1c



1d



## Teaching Points

- Imaging is indicated in acute sinusitis if
  - There is inadequate response to medical therapy
  - There are numerous episodes of acute bacterial sinusitis in a year
  - There is a clinical suspicion of intracranial or intraorbital complications
  - The patient is immunocompromised
- A CT scan of the sinuses is the recommended imaging modality if indicated

## Acute Sinusitis

- Acute sinusitis is a clinical diagnosis and is defined as a rhinosinusitis that has persisted for between 7 and 28 days, with the presence of two or more major sinus symptoms or at least one major and two minor sinus symptoms [5](#)
- Acute sinusitis is normally diagnosed on clinical grounds, and imaging is not usually required. However, there are a number of scenarios in which imaging is indicated if
  - There is inadequate response to medical therapy, or
  - There are numerous episodes of acute bacterial sinusitis in a year, or
  - There is a clinical suspicion of intracranial or intraorbital complications, or
  - The patient is immunocompromised
- Major symptoms: facial pain/pressure, facial congestion/fullness, nasal obstruction/blockage, nasal discharge, hyposmia/anosmia, purulence in the nasal cavity on examination and fever [5](#)
- Minor symptoms: headache, halitosis, fatigue, dental pain, cough and ear pain/pressure/fullness [5](#)
- Symptoms in children are more non-specific with cough and nasal discharge being the most common presentations. Facial pain and headache are not usually present [6](#)
- Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis account for the majority of acute bacterial sinusitis in adult and paediatric populations [6,7](#)
- Mixed microorganisms cultured from intranasal swabs do not usually correlate with the pathologic source [6,7](#)
- Specialist ENT referral is warranted in the following situations [6,8](#)
  - Suspected complications (subperiosteal, intradural, and brain abscesses)
  - No response to 2nd line antibiotic therapy
  - Recurrent disease ( >3 acute episodes per year)
- Use of plain radiography for diagnosis of inflammatory sinus disease is not recommended [1-4,9,21,22](#)

## Coronal Computed Tomography

- Coronal CT is not a routine investigation in the diagnosis of acute bacterial sinusitis and is indicated only for non-responsive or recurrent acute sinusitis, pre-surgical planning and for evaluating suspected complications [1-4,6,8](#)
- Coronal plane optimally displays [9,10](#)
  - The ostiomeatal unit and relationship of the brain and roof of the ethmoid sinus
  - The relationship of the orbits to the paranasal sinuses
- For patients requiring sinus imaging evaluation, consensus in North America and Europe currently recommends CT in preference to plain film radiography which are insensitive and non-specific [1-4](#)
- There have been no studies comparing CT to sinus puncture and aspiration
- CT has low specificity for diagnosis of acute sinusitis, thus clinical correlation is essential [11](#)
- Features of acute sinusitis on CT include: mucosal thickening, presence of air/fluid levels, enhancing pockets with non-enhanced central zone (pus) and complete sinus opacification [12,13](#)
- For anatomical evaluation including pre-surgical planning, a non-contrast scan is adequate
- If complications are suspected, then the scan is usually performed before and after administration of contrast
- Multidetector CT enables fast scan times, and may reduce the need for sedation in young children
- Low-dose CT protocols can effectively reduce the radiation dose without significantly affecting diagnostic quality [14,15](#)

## Magnetic Resonance Imaging

- For intracranial complications of acute sinusitis, MRI is more accurate than CT and is considered by some to be the initial diagnostic modality of choice [16,17](#)
- MRI and MR Venography (MRV) are more sensitive than CT for the diagnosis of cavernous sinus thrombosis [18,19](#)
- Limitations: expensive, not available at all centres, long scan times [20](#)

## References

References are graded from Level I to V according to the Oxford Centre for Evidence-Based Medicine, Levels of Evidence. [Download the document](#)

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