Nasal Obstruction Case

A Self-Directed Learning Module

Department of Otolaryngology – Head & Neck Surgery
Schulich School of Medicine & Dentistry, Western University

Click to Begin
Case Presentation

A 22-year-old male university student presents to your family practice with an eight day history of nasal obstruction.

You are the family physician, click through the module to diagnose and treat this patient.
Patient History

What brings you in today?

My nose has been plugged for the past eight days. I’m having a hard time breathing out of both sides of my nose, and it seems to be more plugged in the morning. I have also had a cough and headache for the past week as well as a fever for the past day or so. I have generally been feeling awful. I tried a decongestant (Otrivin) for the past 24 hours, but that only helped temporarily.

Have you noticed any other symptoms?

For the past five days, my face has been hurting. I have pain in my teeth and a bit in my ears. Further, my sense of smell has been mostly absent, my sense of taste has decreased, and I have felt pressure around my eyes. I have also had thick white-yellow discharge from my nose and my breath has been a bit foul smelling.
Patient History

How is your general health?

This sort of thing has never happened to me before. I’m generally quite healthy, have not had any recent injuries, and have no medical diagnoses to date. I have never been in the hospital or had any surgeries. I am not on any medications, other than the Otrivin, and I do not have any allergies.

Social history?

I’m a full-time student and live in a house with four of my friends. I have never smoked and do not use recreational drugs. I drink 10-20 beers a week. I exercise regularly and I try to eat a healthy diet.
What diagnoses are coming to mind?

Think VINDICATE! (Click on heading to test yourself)

- Vascular
- Endocrine/Metabolic
- Infectious
- Neoplastic
- Trauma/Toxins
- Degenerative
- Autoimmune/Allergic
- Congenital/Genetic
- Iatrogenic/Idiopathic

With your DDx in mind, proceed to focused physical exam.
What diagnoses are coming to mind?

Think VINDICATE! (Click on heading to test yourself)

- Infectious
- Neoplastic
- Degenerative
- Trauma/Toxins
- Endocrine/Metabolic
- Autoimmune/Allergic
- Congenital/Genetic
- Iatrogenic/Idiopathic

Vascular

Why not? Associated infectious symptoms.

DDx
- Vasculitis
- Vasomotor rhinitis

X

With your DDx in mind, proceed to focused physical exam.
What diagnoses are coming to mind?

Think VINDICATE! (Click on heading to test yourself)

Vascular

Endocrine/Metabolic

Trauma/Toxins

Autoimmune/Allergic

Congenital/Genetic

Iatrogenic/Idiopathic

Infectious

Why?
Eight day history, associated with a cold.

DDx
- Infectious rhinitis/acute rhinosinusitis
- Rhinoscleroma
- Chronic rhinosinusitis
- Adenoiditis
- Granulomatous disease

With your DDx in mind, proceed to focused physical exam.
What diagnoses are coming to mind?

Think VINDICATE! (Click on heading to test yourself)

- Vascular
- Infectious
- Trauma/Toxins
- Endocrine/Metabolic
- Autoimmune/Allergic
- Congenital/Genetic
- Iatrogenic/Idiopathic
- Autoimmune/Allergic

Neoplastic - Unlikely

Why?
Short presenting history.

DDx
- Papilloma
- Nasal polyposis
- Hemangioma
- Pyogenic granuloma
- Juvenile nasopharyngeal angiofibromas
- Malignancy

With your DDx in mind, proceed to focused physical exam.
What diagnoses are coming to mind?

Think VINDICATE! (Click on heading to test yourself)

- Vascular
- Infectious
- Endocrine/Metabolic
- Trauma/Toxins
- Autoimmune/Allergic
- Congenital/Genetic
- Iatrogenic/Idiopathic
- Neoplastic

With your DDx in mind, proceed to focused physical exam.

Degenerative

Why not?
Patient's young age and acute symptom onset.
What diagnoses are coming to mind?

Think VINDICATE! (Click on heading to test yourself)

Vascular
Endocrine/Metabolic
Infectious
Trauma/Toxins
Autoimmune/Allergic
Congenital/Genetic
Neoplastic
Degenerative

Iatrogenic/Idiopathic - Unlikely

Why not?
No previous nasal surgery; symptoms with abrupt onset.

DDx
Synechiae (Adhesions in the nose)
Septal deviation

With your DDx in mind, proceed to focused physical exam.
What diagnoses are coming to mind?

Think VINDICATE! (Click on heading to test yourself)

Vascular

Endocrine/Metabolic

Infectious

Neoplastic

Degenerative

Iatrogenic/Idiopathic

---

**Congenital/Genetic**

**Why?**
A congenital or genetic disorder are less likely given prior normal nasal function, and acute, eight day history.

**DDx**
- Neurogenic tumours
- Thornwaldt's cyst
- Choanal atresia
- Nasoseptal deformities
- Cystic fibrosis

---

With your DDx in mind, proceed to focused physical exam.
What diagnoses are coming to mind?

Think VINDICATE! (Click on heading to test yourself)

- Vascular
- Infectious
- Endocrine/Metabolic
- Neoplastic
- Degenerative
- Trauma/Toxins
- Congenital/Genetic
- Iatrogenic/Idiopathic
- Autoimmune/Allergic

Why?
Common cause of nasal obstruction.

DDx
- Environmental irritants
- Allergic rhinitis

With your DDx in mind, proceed to focused physical exam.
What diagnoses are coming to mind?

Think VINDICATE! (Click on heading to test yourself)

- Vascular
- Infectious
- Neoplastic
- Degenerative
- Endocrine/Metabolic
- Congenital/Genetic
- Iatrogenic/Idiopathic
- Autoimmune/Allergic

Trauma/Toxins - Unlikely

**Why not?**
Unlikely based on history, but important to rule out on history.

**DDx**
- Nasal/septal fractures
- Foreign body
- Septal hematomas
- Synechiae (Adhesions in the nose)
- Rhinitis medicamentosa

With your DDx in mind, proceed to focused physical exam.
What diagnoses are coming to mind?
Think VINDICATE! (Click on heading to test yourself)

- Vascular
- Infectious
- Neoplastic
- Degenerative
- Congenital/Genetic
- Autoimmune/Allergic
- Iatrogenic/Idiopathic

**Endocrine/Metabolic - Unlikely**

**Why not?**
Unlikely based on history and no suggestive associated symptoms.

**DDx**
- Hypothyroidism
- Diabetes
- Pregnancy (Female)

With your DDx in mind, proceed to focused physical exam.
Physical Exam  *(Click on the physical examinations.)*

- General inspection & Vitals
- Cranial Nerve Exams
- Ophthalmic Exam
- Head & Neck Exam
- Systems Review
Physical Exam  
(Click on the physical examinations.)

- General inspection & Vitals
- Cranial Nerve Exams
- Ophthalmic Exam
- Head & Neck Exam
- Systems Review

Patient looks uncomfortable, but doesn't appear to be in distress.

**Vitals:**
- HR: 68 bpm
- RR: 12 per minute
- BP: 120/80 mmHg
- Temperature: 37°C
Physical Exam *(Click on the physical examinations.)*

- General inspection & Vitals
- Cranial Nerve Exams
- Ophthalmic Exam
- Head & Neck Exam
- Systems Review

Cranial Nerve Exams:

CN II – XII: Intact
Physical Exam

(Click on the physical examinations.)

General inspection & Vitals

Cranial Nerve Exams

Ophthalmic Exam

Extraocular movements: normal
Pupil size: 3mm (L and R eyes)
Reactivity: Direct and consensual light reflex in both eyes, normal accommodation
Visual acuity: 20/20 left, 20/20 right

Head & Neck Exam

Systems Review

Ophthalmic Exam

Proceed to investigations
Focused Head & Neck Exam

General:

Inspection
• No distress

Palpation
• No palpable lymph nodes

Oral Cavity Exam:

→ Normal oral cavity exam.

Nasal speculum exam:

View:

Interpretation?

Review: Nasal Cavity Anatomy
Focused Head & Neck Exam

General:

Inspection
• No distress

Palpation
• No palpable lymph nodes

Oral Cavity Exam:

→ Normal oral cavity exam.

Nasal speculum exam:

View:

Swollen, erythematous inferior turbinate, with white exudate.

Review: Nasal Cavity Anatomy
Lateral wall of nasal cavity – Sagittal view

- Frontal Sinus
- Sphenoid Sinus
- Middle turbinate
- Inferior turbinate
- Opening of the Eustachian tube
- Opening of the maxillary sinus
- Opening of the nasolacrimal duct
- Ethmoidal bulla
- Opening of frontal sinus
- Middle meatus
- Inferior meatus
- Opening of maxillary sinus
- Sphenoethmoidal recess & opening of sphenoid sinus
- Adenoid
- Tubal tonsil
- Uvula
- Semilunar hiatus
- Hard palate
- Tongue
- Superior turbinate
- Hard palate
- Tongue
Physical Exam

(Click on the physical examinations.)

General inspection & Vitals

Cranial Nerve Exams

Ophthalmic Exam

Head & Neck Exam

Systems Exams

CVS: Normal
Respiratory: Normal

Proceed to investigations
Investigations *(Click on the buttons to see investigation results.)*

- Head MRI
- CT of Paranasal Sinuses
- X-ray of Paranasal Sinuses
- Endoscopically Guided Culture
- Biopsy
Investigations  *(Click on the buttons to see investigation results.)*

- Head MRI
- CT of Paranasal Sinuses
- X-ray of Paranasal Sinuses
- Endoscopically Guided Culture
- Biopsy

Not required
Investigations (Click on the buttons to see investigation results.)

- Head MRI
- CT of Paranasal Sinuses
- X-ray of Paranasal Sinuses
- Endoscopically Guided Culture
- Biopsy

Interpretation?

Review: Paranasal Sinus Anatomy

Continue to Diagnosis
Opacification of the left maxillary sinus and ethmoid sinuses.

Review: Paranasal Sinus Anatomy
Review: Paranasal Sinus Anatomy

Axial Plane

Coronal Plane

Sagittal Plane

Frontal sinuses

Ethmoidal sinuses

Sphenoid sinuses

Maxillary sinuses
Review: Paranasal Sinus Anatomy

Axial Plane
Coronal Plane
Sagittal Plane
Review: Paranasal Sinus Anatomy

Axial Plane

Coronal Plane

Sagittal Plane

Frontal sinus

Ethmoidal sinuses

Sphenoid sinus

Maxillary sinuses

Nasopharynx

Hard palate

Frontal sinus

Sphenoid sinus

Maxillary sinuses

Nasopharynx
Investigations  
*(Click on the buttons to see investigation results.)*

- Head MRI
- CT of Paranasal Sinuses
- X-ray of Paranasal Sinuses
- Endoscopically Guided Culture
- Biopsy

Interpretation?
Investigations

(Click on the buttons to see investigation results.)

- Head MRI
- CT of Paranasal Sinuses
- X-ray of Paranasal Sinuses
- Endoscopically Guided Culture
- Biopsy

Opacification of the left maxillary sinus

*note: sinus X-ray is of limited value*
Investigations

(Click on the buttons to see investigation results.)

- Head MRI
- CT of Paranasal Sinuses
- X-ray of Paranasal Sinuses
- Endoscopically Guided Culture
- Biopsy

Results:
*Streptococcus pneumoniae*

*Note: culture is not required for this diagnosis*
Investigations  
(Click on the buttons to see investigation results.)

- Head MRI
- CT of Paranasal Sinuses
- X-ray of Paranasal Sinuses
- Endoscopically Guided Culture

Biopsy not indicated for this patient.
### Summary of findings

**Chief Complaints:**
- 8 day history of bilateral nasal obstruction, secondary to a 1 week cold

**Physical Examination:**
- Vitals and general inspection: Patient appears moderately unwell
- Cranial nerve exams:
  - CN II – XII were normal
- Ophthalmic exam: normal
- Head & neck exam:
  - Inspection & palpation: normal
  - Oral exam: normal
  - Anterior rhinoscopy:
    - Erythematous, swollen turbinates with white exudate
- Systems review: Normal

**Investigations:**
- Imaging:
  - Opacity in the left maxillary sinus
- Laboratory:
  - Endoscopically guided culture: Positive for Streptococcus Pneumoniae

**Based on your findings, choose the most likely diagnosis:**

a. Allergic rhinitis

b. Nasal polyposis

c. Rhinitis medicamentosa

d. Acute bacterial rhinosinusitis
Incorrect. This patient does have some symptoms of allergic rhinitis including congestion and rhinorrhea. However, the patient’s symptoms of facial pain and purulent discharge, plus the imaging findings, point to a different diagnosis.

Please choose again.
Incorrect. Nasal polyps are painless, non-cancerous growths in the nasal cavity, typically found on the lateral wall. Symptoms of nasal polyposis include nasal obstruction, changes in smell, and rhinorrhea. Examination of this patient with anterior rhinoscopy did not reveal any polyps within the nasal cavity. Further, no polyps were seen on imaging.

Please choose a different diagnosis.
Incorrect. Rhinitis medicamentosa is a condition of rebound congestion secondary to prolonged use of topical nasal decongestants. Symptoms include: nasal obstruction, dryness, and irritation. Consequently, the use of topical nasal decongestants should be limited to 3 days.

In this case, the patient had only used Otrivin for 24 hours, which is unlikely to have caused rebound congestion. Further, his other symptoms and imaging findings point to a different diagnosis.

Please choose again.
Diagnosis

Correct! The is a case of **acute bacterial rhinosinusitis** given the duration being less than 4 weeks.

This patient had classic symptoms of acute rhinosinusitis, including:
- Facial pain
- Pressure headache
- Nasal discharge
- Decreased sense of smell

Further, imaging revealed opacification in the patient’s left maxillary sinus and ethmoidal sinuses.

Now that you have made the correct diagnosis, choose the best treatment for this patient.
Choose the best treatments for this patient:

**Medical**
- Nasal Saline
- Topical Decongestant
- Analgesics
- Topical Antibiotics
- Oral Antibiotics
- Nasal Steroids

**Surgical**
- Functional Endoscopic Sinus Surgery
- Open Sinus Surgery
- Systemic Steroids
Choose the best treatments for this patient:

**Medical**
- Nasal Saline
- Topical Decongestant
- Analgesics
- Topical Antibiotics
- Oral Antibiotics
- Nasal Steroids
- Systemic Steroids

**Surgical**
- Functional Endoscopic Sinus Surgery
- Open Sinus Surgery

Nasal saline reduces dryness and crusting of the nasal mucosa. It also may improve mucous clearance. Nasal saline may provide symptomatic relief for this patient, and may be prescribed at the physician’s discretion.
Choose the best treatments for this patient:

**Medical**
- Nasal Saline
- Topical Decongestant
- Analgesics
- Topical Antibiotics
- Oral Antibiotics
- Nasal Steroids
- Systemic Steroids

**Surgical**
- Functional Endoscopic Sinus Surgery
- Open Sinus Surgery

A brief (3 day) course of a topical decongestant (such as topical oxymetazoline) may be given for symptomatic relief. Care must be taken due to the risk of rebound mucosal swelling (*rhinitis medicamentosa*). This would be recommended only under the physician’s discretion.
Choose the best treatments for this patient:

**Medical**
- Nasal Saline
- Topical Decongestant
- Analgesics
- Topical Antibiotics
- Oral Antibiotics
- Nasal Steroids
- Systemic Steroids

**Surgical**
- Functional Endoscopic Sinus Surgery
- Open Sinus Surgery

Over the counter analgesics, such as acetaminophen or nonsteroidal anti-inflammatory medications, are helpful in treating associated discomfort.
Choose the best treatments for this patient:

**Medical**
- Nasal Saline
- Topical Decongestant
- Analgesics
- Topical Antibiotics
- Oral Antibiotics
- Nasal Steroids
- Systemic Steroids

**Surgical**
- Functional Endoscopic Sinus Surgery
- Open Sinus Surgery

Topical antibiotics (such as gentamicin irrigation) may be considered in refractory cases. They would not be used in this case.
Oral antibiotics are the **primary** treatment for acute bacterial rhinosinusitis. First-line therapy is amoxicillin with or without clavulanate for 10 days.
Choose the best treatments for this patient:

**Medical**
- Nasal Saline
- Topical Decongestant
- Analgesics
- Topical Antibiotics
- Oral Antibiotics
- Nasal Steroids
- Systemic Steroids

**Surgical**
- Functional Endoscopic Sinus Surgery
- Open Sinus Surgery

Nasal steroids are typically only prescribed for chronic rhinosinusitis. They would not be useful in this case.
Choose the best treatments for this patient:

**Medical**
- Nasal Saline
- Topical Decongestant
- Analgesics
- Topical Antibiotics
- Oral Antibiotics
- Nasal Steroids

**Surgical**
- Functional Endoscopic Sinus Surgery
- Open Sinus Surgery
- Systemic Steroids

Systemic steroids are used primarily to decrease mucosal inflammation in those patients with nasal polyps that are longstanding.
Choose the best treatments for this patient:

**Medical**
- Nasal Saline
- Topical Decongestant
- Analgesics
- Topical Antibiotics
- Oral Antibiotics
- Nasal Steroids
- Systemic Steroids

**Surgical**
- Functional Endoscopic Sinus Surgery
- Open Sinus Surgery

FESS is indicated only for select patients who fail thorough medical management. FESS would not be considered at this stage of the management of this patient.
Choose the best treatments for this patient:

**Medical**
- Nasal Saline
- Topical Decongestant
- Analgesics
- Topical Antibiotics
- Oral Antibiotics
- Nasal Steroids
- Systemic Steroids

**Surgical**
- Functional Endoscopic Sinus Surgery
- Open Sinus Surgery

This is rarely used today, and would not be considered in this patient at this time.
Where does the maxillary sinus drain in the nasal cavity?

a. Sphenoethmoidal recess
b. Superior meatus
c. Middle meatus
d. Inferior meatus
Where does the maxillary sinus drain in the nasal cavity?

a. Sphenoethmoidal recess
b. Superior meatus  Incorrect. The sphenoid sinus drains into the sphenoethmoidal recess.
c. Middle meatus

d. Inferior meatus
Where does the maxillary sinus drain in the nasal cavity?

a. Sphenoethmoidal recess  
   Incorrect. The paranasal sinuses do not drain into the superior meatus.

b. Superior meatus

c. Middle meatus

d. Inferior meatus
Where does the maxillary sinus drain in the nasal cavity?

a. Sphenoethmoidal recess
b. Superior meatus
C. Correct! The maxillary sinus drains into the semilunar hiatus found in the middle meatus. The frontal sinus and ethmoidal sinuses also drain into the semilunar hiatus.
d. Middle meatus

d. Inferior meatus
Where does the maxillary sinus drain in the nasal cavity?

a. Sphenoethmoidal recess
b. Superior meatus
c. Middle meatus
d. Inferior meatus  \[\text{Incorrect.} \text{ The nasolacrimal duct drains into the inferior meatus.}\]
Identify the sphenoid sinus on this CT scan.

a. A
b. B
c. C
Quiz – Q2

Identify the sphenoid sinus on this CT scan.

a. A
b. B
c. C

Incorrect. A is the frontal sinus.
Quiz – Q2

Identify the sphenoid sinus on this CT scan.

a. A
b. B
c. C

Incorrect. B is an ethmoidal sinus.
Identify the sphenoid sinus on this CT scan.

a. A
b. B
c. C

Correct!
Which of the following is NOT a typical symptom of acute rhinosinusitis?

a. Poor sense of smell
b. Obstruction
c. Discharge
d. Vision changes
e. All of the above are typical symptoms of acute rhinosinusitis.
Which of the following is NOT a typical symptom of acute rhinosinusitis?

a. **Poor sense of smell**  Incorrect. When recalling the symptoms of acute bacterial rhinosinusitis, think “PODS”:
   • Facial **P**ain/pressure/fullness
   • Nasal **O**bstruction
   • Nasal purulence/discoloured **D**ischarge
   • **S**mell disorder (hyposmia/anosmia)
   *Patient should have at least 2 of the PODS symptoms, one of which must be “O” or “D”*

b. **Obstruction**

c. **Discharge**

d. **Vision changes**

e. **All of the above are typical symptoms of acute rhinosinusitis.**
Which of the following is NOT a typical symptom of acute rhinosinusitis?

a. Poor sense of smell  Incorrect. When recalling the symptoms of acute bacterial rhinosinusitis, think “PODS”:
   • Facial **P**ain/pressure/fullness
   • Nasal **O**bstruction
   • Nasal purulence/discoloured **D**ischarge
   • **S**mell disorder (hyposmia/anosmia)

   *Patient should have at least 2 of the PODS symptoms, one of which must be "O" or "D"

b. Obstruction

c. Discharge

d. Vision changes

e. All of the above are typical symptoms of acute rhinosinusitis.
Which of the following is NOT a typical symptom of acute rhinosinusitis?

a. Poor sense of smell  Incorrect. When recalling the symptoms of acute bacterial rhinosinusitis, think “PODS”:
   • Facial Pain/pressure/fullness
   • Nasal Obstruction
   • Nasal purulence/discoloured Discharge
   • Smell disorder (hyposmia/anosmia)
   *Patient should have at least 2 of the PODS symptoms, one of which must be “O” or “D”

b. Obstruction

c. Discharge

d. Vision changes

e. All of the above are typical symptoms of acute rhinosinusitis.
Quiz – Q3

Which of the following is NOT a typical symptom of acute rhinosinusitis?

a. Poor sense of smell

b. Obstruction

c. Discharge

d. Vision changes

e. All of the above are typical symptoms of acute rhinosinusitis.

Correct! Vision changes are not a typical symptom of rhinosinusitis. However, orbital complications may arise from rhinosinusitis, caused by acute spread of infection from an adjacent sinus.
Which of the following is NOT a typical symptom of acute rhinosinusitis?

a. Poor sense of smell  Incorrect. When recalling the symptoms of acute bacterial rhinosinusitis, think “PODS”:
   • Facial Pain/pressure/fullness
   • Nasal Obstruction
   • Nasal purulence/discoloured Discharge
   • Smell disorder (hyposmia/anosmia)
   *Patient should have at least 2 of the PODS symptoms, one of which must be “O” or “D”

b. Obstruction

c. Discharge

d. Vision changes

e. All of the above are typical symptoms of acute rhinosinusitis.
What is the first-line therapy for acute rhinosinusitis?

a. Topical decongestants
b. Systemic decongestants
c. Nasal steroids
d. Oral antibiotics
What is the first-line therapy for acute rhinosinusitis?

a. **Topical decongestants**

b. **Systemic decongestants**

c. **Nasal steroids**

d. **Oral antibiotics**

Incorrect. Nasal decongestants are not the primary therapy for acute rhinosinusitis. A brief (3 day) course of a topical decongestant (such as topical oxymetazoline) may be given for symptomatic relief. Care must be taken due to the risk of rebound mucosal swelling (*rhinitis medicamentosa*).
What is the first-line therapy for acute rhinosinusitis?

a. **Topical decongestants**

b. **Systemic decongestants**  
   **Incorrect.** While systemic decongestants may provide symptomatic relief, they are not the primary therapy for acute rhinosinusitis.

c. **Nasal steroids**

d. **Oral antibiotics**
What is the first-line therapy for acute rhinosinusitis?

a. **Topical decongestants**  
   Incorrect. Mild rhinosinusitis symptoms of less than seven days duration can be managed with supportive care, including analgesics, short-term decongestants, saline nasal irrigation, and intranasal corticosteroids.

b. **Systemic decongestants**

c. **Nasal steroids**

d. **Oral antibiotics**
What is the first-line therapy for acute rhinosinusitis?

a. Topical decongestants
b. Systemic decongestants
c. Nasal steroids
d. Oral antibiotics

Correct! Oral antibiotics are the primary treatment for acute rhinosinusitis. First-line therapy is amoxicillin with or without clavulanate for 10 days.
Congratulations! You have finished the nasal obstruction module.

Key points to remember:

- Acute rhinosinusitis is the inflammation of the mucosa of the paranasal sinuses and nasal cavity
  - It is often preceded by viral rhinitis/upper respiratory infection, which causes inflammation and obstruction of sinus outflow tracts

Pathogens of acute rhinosinusitis include:

- Viral (most common): rhinovirus, parainfluenza virus, RSV
- Bacterial: *S. pneumoniae, H. influenza, M. catarhallis*
- Fungal

Diagnosis:

- For acute bacterial rhinosinusitis, think “PODS”:
  - Facial Pain/pressure/fullness
  - Nasal Obstruction
  - Nasal purulence/discoloured Discharge
  - Smell disorder (hyposmia/anosmia)
- Patient should have at least 2 of the PODS symptoms, one of which must be O or D
- Direct visualization with endoscopy

Imaging:

- Radiographic imaging should not be used for routine evaluation of acute rhinosinusitis

Treatment:

- Antibiotics: amoxicillin with or without clavulanate
- Adjunctive treatments: Nasal saline, decongestants (*limit topical decongestants to 3 days), analgesics, intranasal corticosteroid
Module Review Sections

Anatomy:

- Nasal Cavity Anatomy
- Paranasal Sinus Anatomy
Review: Nasal Cavity Anatomy

Lateral wall of nasal cavity – Sagittal view

- Frontal Sinus
- Sphenoid Sinus
- Opening of the Eustachian tube
- Superior turbinate
- Middle turbinate
- Inferior turbinate
- Opening of nasolacrimal duct
- Opening of frontal sinus
- Opening of maxillary sinus
- Middle meatus
- Inferior meatus
- Ethmoidal bulla
- Sphenoethmoidal recess & opening of sphenoid sinus
- Middle turbinate
- Hard palate
- Tongue
- Uvula
- Adenoid
- Tubal tonsil
- Semilunar hiatus
Review: Paranasal Sinus Anatomy

Axial Plane

Coronal Plane

Sagittal Plane

1. Frontal sinuses
2. Ethmoidal sinuses
3. Sphenoid sinuses
4. Maxillary sinuses

Frontal sinuses

Ethmoidal sinuses

Sphenoid sinuses

Maxillary sinuses
Review: Paranasal Sinus Anatomy

Axial Plane

Coronal Plane

Sagittal Plane

Frontal sinuses

Ethmoidal sinuses

Maxillary sinus

Sphenoidal sinuses

Axial Plane Image:
- Frontal sinuses

Coronal Plane Image:
- Ethmoidal sinuses
- Middle turbinate
- Inferior turbinate
- Maxillary sinus
- Hard palate

Sagittal Plane Image:
- Sphenoidal sinuses
- Choanae
Review: Paranasal Sinus Anatomy

Axial Plane

Coronal Plane

Sagittal Plane

Frontal sinus

Ethmoidal sinuses

Sphenoid sinus

Maxillary sinuses

Nasopharynx

Hard palate

Nasal septum

Frontal sinus

Sphenoid sinus

Maxillary sinuses
Module Authors

• Kylen Van Osch, Meds 2020 & Peng You MD
• Module adapted from: Jason Beyea MD PhD FRCSC