

In The Name Of God

Approach to upper respiratory tract symptom

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Upper Respiratory Symptoms



Cough



Rhinorrhea



Sore throat



Stridor

PEDIATRIC COUGH: OVERVIEW



DEFINITION:

Vital protective reflex clearing airways



MECHANISM:



Irritant receptors



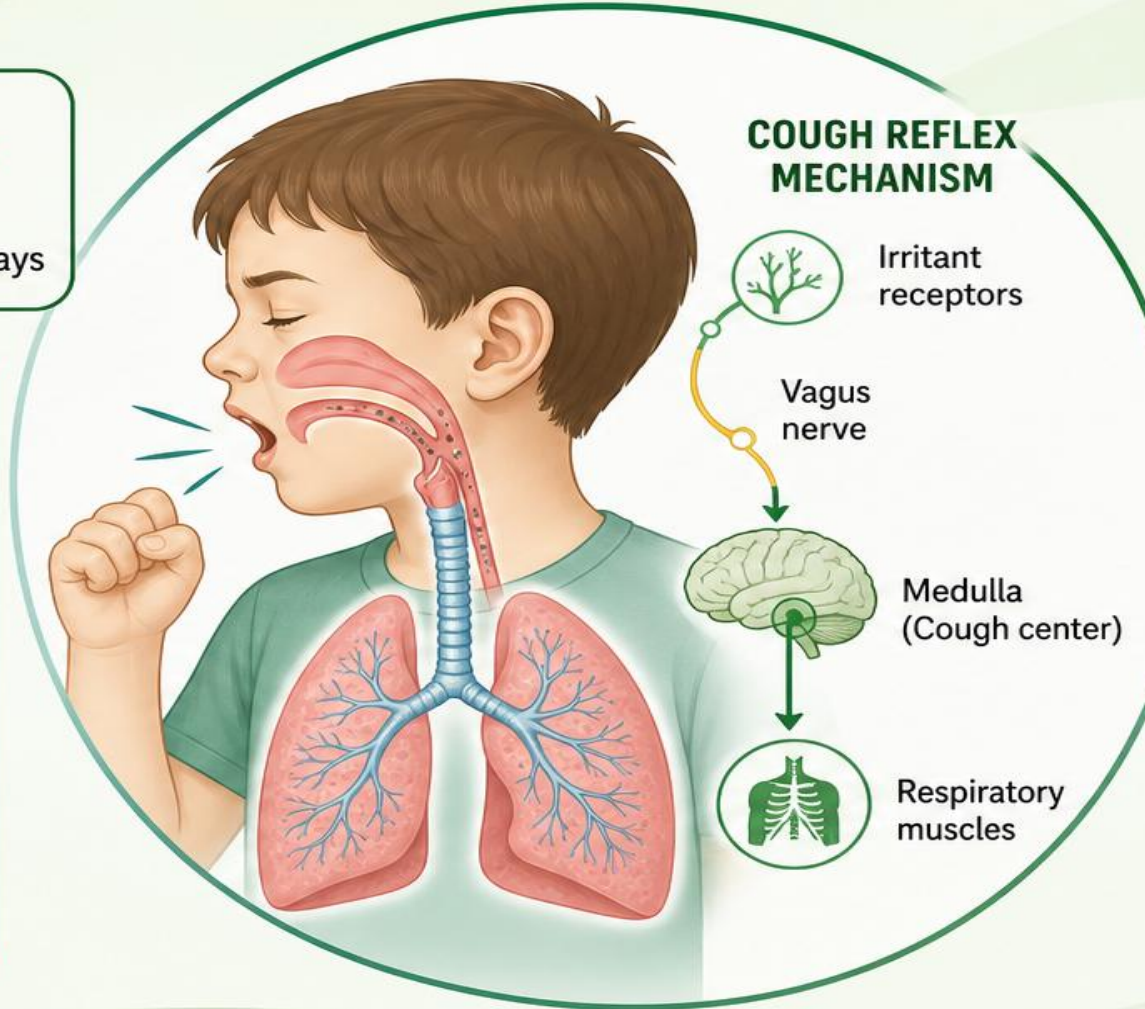
Vagus nerve



Medulla
(Cough center)



Respiratory muscles



COUGH REFLEX MECHANISM



Irritant receptors

Vagus nerve



Medulla
(Cough center)



Respiratory muscles



CLASSIFICATION:



Acute
(<2 weeks)



Subacute
(2-4 weeks)



Chronic
(>4 weeks)

Distinguishing Cough Sounds in Pediatrics

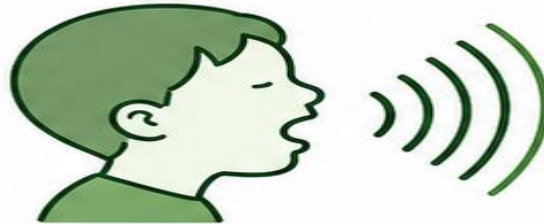
1



Barking / Brassy

Croup, bacterial tracheitis, spasmodic croup

2



Paroxysmal / Whooping

Pertussis, parapertussis

3



Staccato

Chlamydia trachomatis pneumonia in infants

4



Wet / Productive

Suppurative lung disease, CF, Bronchiectasis, bacterial pneumonia

5



Disappearance during sleep

Psychogenic / Habit cough



Clinical correlation and history are essential for accurate diagnosis.

Associated Symptoms & Diagnostic Clues



Fever → Infectious etiology
(Pneumonia, Bronchiolitis)



Rhinorrhea / Sneezing → Viral URI, Allergic Rhinitis



Wheezing → Asthma, Bronchiolitis, Foreign Body



Failure to Thrive / Weight Loss →
Cystic Fibrosis, Tuberculosis, Immunodeficiency



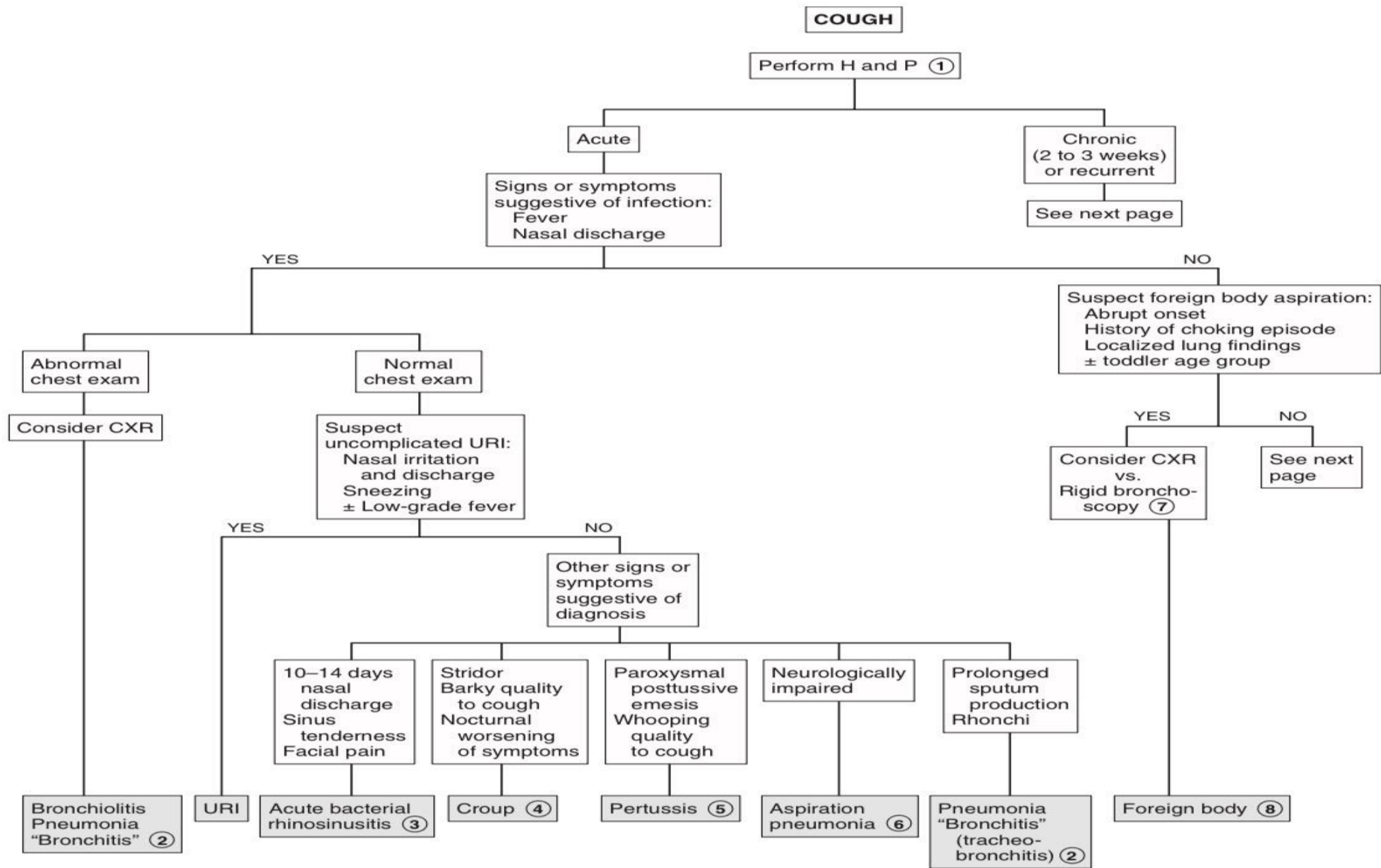
Choking Episode →
Foreign Body Aspiration (Crucial Question!)



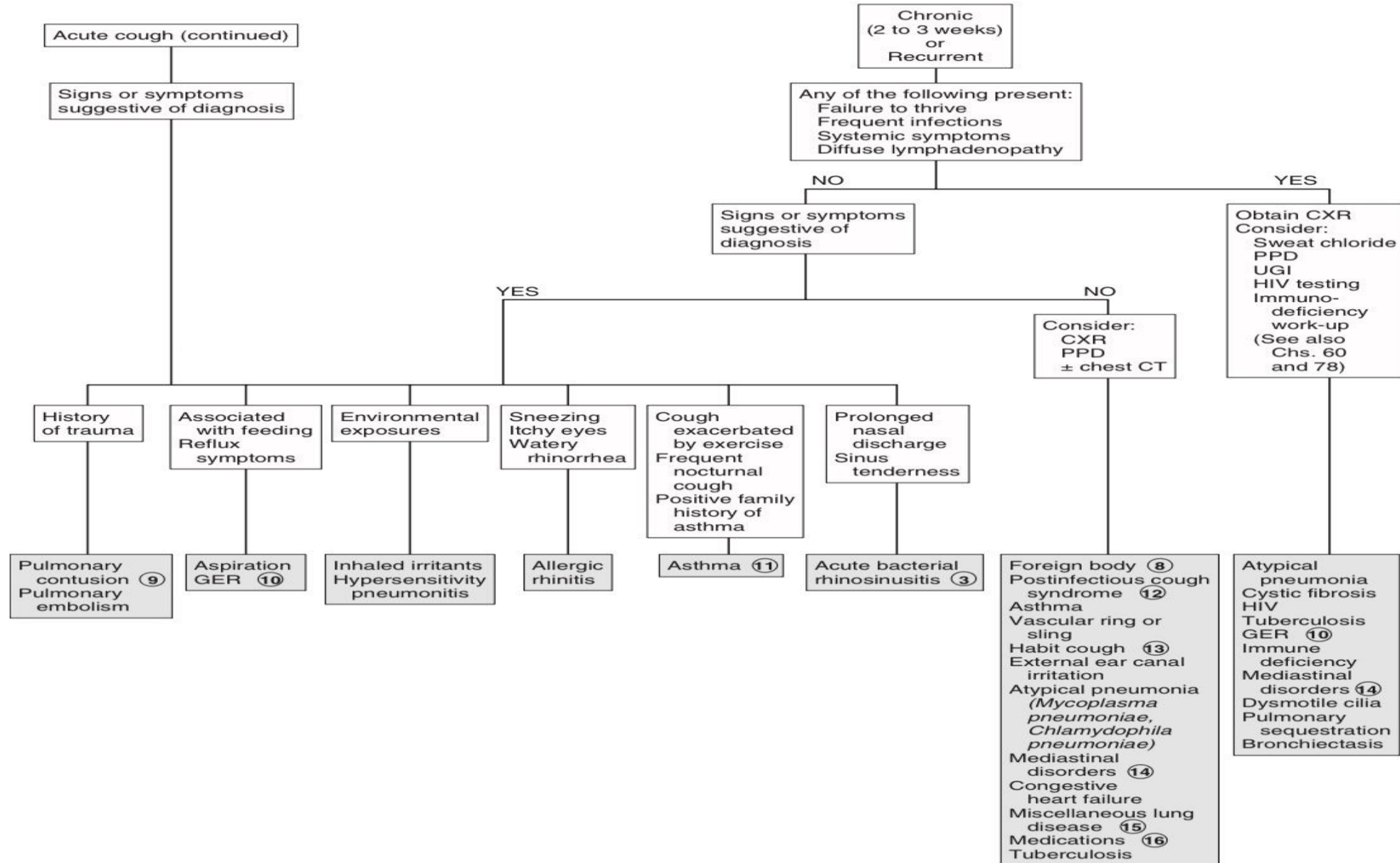
Feeding Difficulties / Vomiting →
GERD, Aspiration Syndromes



Night Sweats → Tuberculosis, Malignancy



COUGH (continued)



Rhinorrhea

Discharge of thin nasal mucus



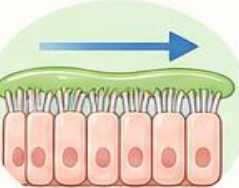
1 Pathophysiology



- Inflammation, irritation, or obstruction of the nasal mucosa



- Increased mucus production



- Impaired mucociliary clearance

2 Clinical Significance



Extremely common
complaint in
pediatrics



Main goal:
distinguish
benign causes
from serious
pathology

3 Classification



Acute
< 4 weeks

VS.

Chronic
≥ 4 weeks



Unilateral
one side

VS.

Bilateral
both sides



**Clear/
Watery**
thin, transparent

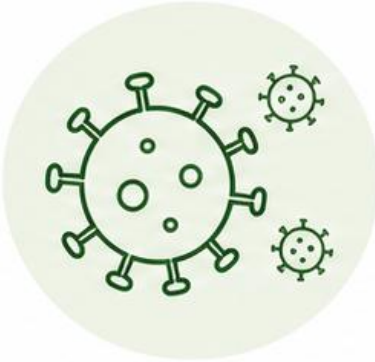
VS.

Purulent
thick, yellow
or green



Acute Rhinorrhea

Duration <10-14 days



Viral URI

Common Cold:
Rhinovirus, RSV, Influenza



Clear to
mucopurulent discharge



Allergic Rhinitis

Seasonal pollens/allergens



Acute Bacterial Sinusitis

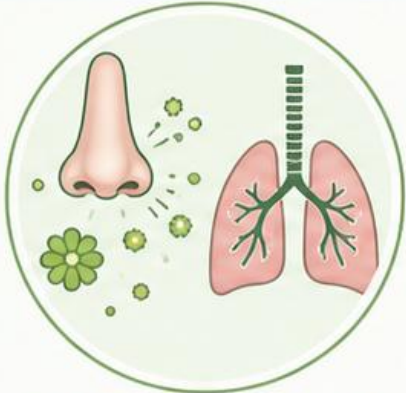
Complication of URI



Symptoms >10 days

Chronic Rhinorrhea

(Duration: weeks to months)



Allergic Rhinitis

- Triad: rhinorrhea, obstruction, sneezing/itching
- Often linked to asthma



Chronic Sinusitis

- Inflammation of sinuses >12 weeks



Non-Allergic Rhinitis

- Vasomotor reaction to temperature, smoke, odors



Adenoidal Hypertrophy

- Causes obstruction and secondary rhinorrhea





Unilateral Rhinorrhea: A Crucial Red Flag

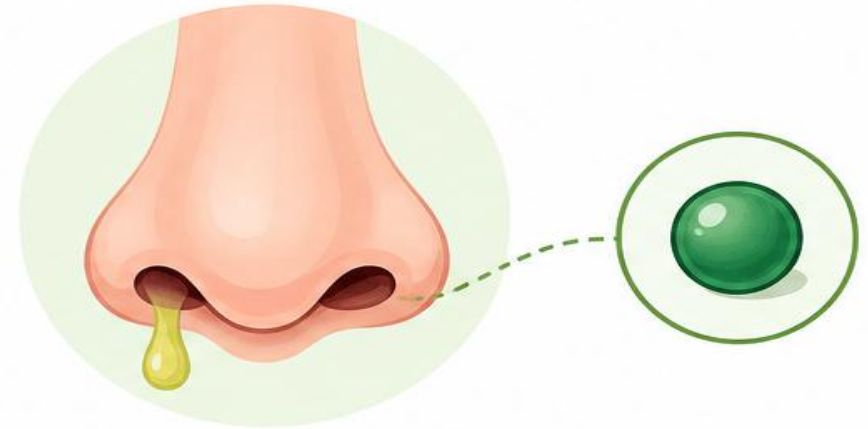


1

Nasal Foreign Body



Foul-smelling, purulent, unilateral discharge in toddlers/preschoolers. Requires visualization and removal.

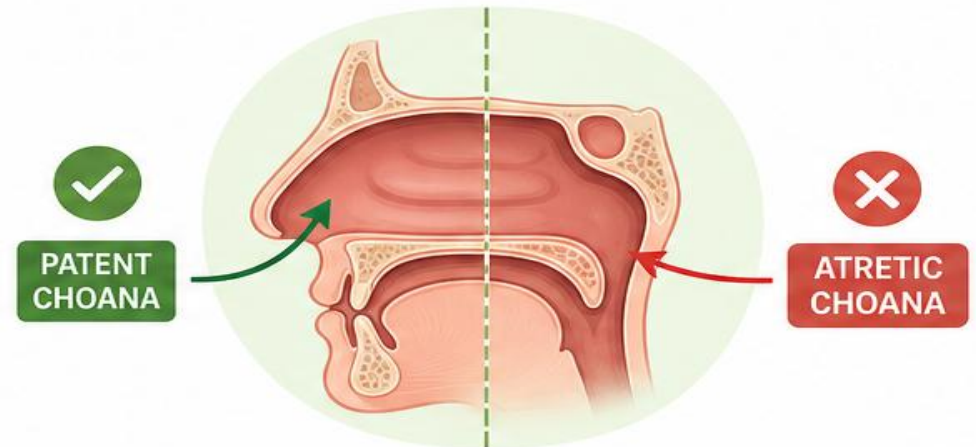


2

Choanal Atresia



Chronic single-sided discharge and obstruction. May present later than neonatal emergency cases.



Always investigate unilateral nasal discharge.

Structural Abnormalities & CSF Rhinorrhea

Structural Abnormalities



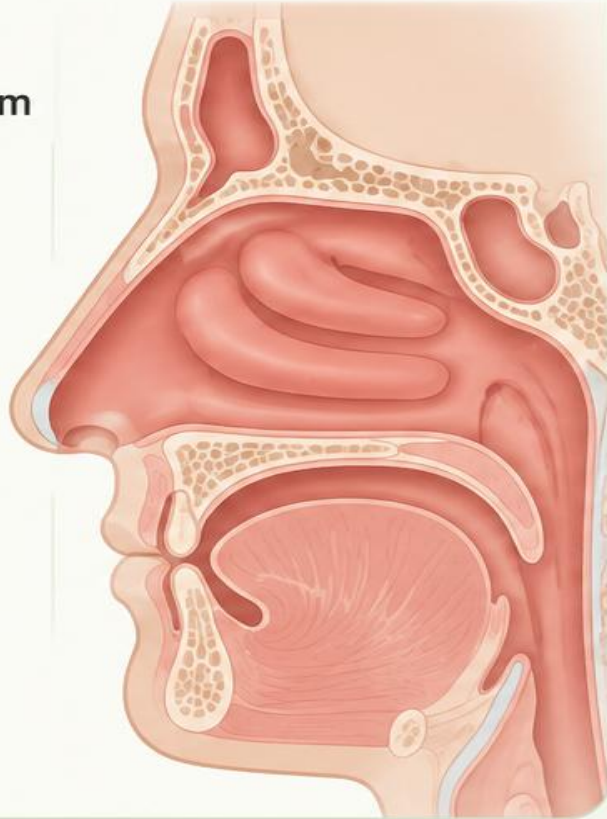
Deviated septum



Nasal polyps



Tumors



CSF Rhinorrhea



Rare but serious



Head trauma or skull base surgery



Clear, watery discharge



Worse on bending forward (reservoir sign)



RHINORRHEA

Perform H and P ①

Acute
(<10 days)

Chronic
(>10 days)

Character of nasal
secretions ⑦

Purulent
or bloody

Nonpurulent

Prominent sneezing
Itchy eyes or nose
Allergic shiners
Nasal crease
Other signs of atopy
present

YES

NO

Viral rhinosinusitis ②
Allergic rhinitis ③
Nonallergic inflammatory
rhinitis with eosinophils (NARES) ③
Vasomotor rhinitis or irritant rhinitis ④
Viral prodrome ⑤
CSF leak ⑥

Foreign body ⑧
Bacterial rhinosinusitis ⑨
Rhinitis medicamentosa ⑩
Nasal polyps
Drugs or medications ⑪
Juvenile nasopharyngeal
angiofibroma ⑫
Adenoidal hyperplasia
Choanal atresia or stenosis ⑬
Nasal tumor
Septal hematoma or abscess
Other infection (syphilis,
diphtheria) ⑭

Allergic rhinitis ⑬
Nonallergic rhinitis
with eosinophilia ③

Vasomotor rhinitis or
irritant rhinitis ④
Rhinitis medicamentosa ⑩
Nasal polyps
Drugs or medications ⑪
CSF leak ⑥
Rhinitis of pregnancy (or menses)
Choanal atresia/stenosis ⑬
Septal deformity (congenital
or acquired)
Congenital malformation
Nasopharyngeal reflex or GER
Granulomatous disease
Ciliary dyskinesia
Immunodeficiency
Nasal tumor
Horner syndrome

Sore Throat

Tonsillopharyngitis overview

1 DEFINITION

Inflammation of the pharynx, often involving tonsils (Tonsillopharyngitis).



2 PREVALENCE

One of the most common reasons for pediatric office visits.



3 SEASONALITY

VIRAL



Peaks in winter and early spring.

BACTERIAL (GAS)



Most common in winter and early spring.

4 AGE GROUPS



Rare in children <2–3 years (usually viral if present).



Peak incidence for Strep throat:

5–15 YEARS





Sore Throat: Red Flags



**Toxic appearance /
severe illness**



**Suspected peritonsillar or
retropharyngeal abscess**



**Respiratory distress,
stridor, or drooling**



**Rash with
systemic illness**



**Muffled 'hot potato'
voice or trismus**



**Unimmunized child with
pseudomembrane concern
(diphtheria)**



**Neck swelling or severe
unilateral neck pain**



**Severe sore throat with high
fever and worsening neck
symptoms (consider deep
neck infection / Lemierre syndrome)**



**Dehydration or
inability to swallow**



Red flags require urgent evaluation.





Viral vs Bacterial Sore Throat

Primary clinical task: distinguish common viral causes from treatable bacterial causes



Viral (80–90%)



Adenovirus, Rhinovirus, Coronavirus



EBV (Mononucleosis)



Enteroviruses
(Coxsackie / Herpangina)



Herpes Simplex Virus (HSV)



Influenza



Parainfluenza

VS

Bacterial (10–20%)



Group A beta-hemolytic
Streptococcus (GAS)



Streptococcus pyogenes



*Arcanobacterium
haemolyticum* (adolescents)



Fusobacterium necrophorum
(Lemierre syndrome)



Corynebacterium diphtheriae
(rare, unimmunized)

★ **GAS = the
one we must
treat!**



Neisseria gonorrhoeae: consider in sexual abuse/activity



CLINICAL FEATURES

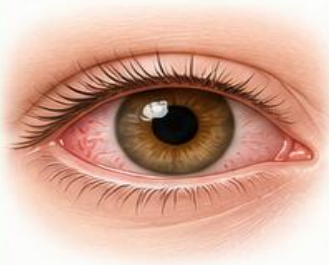
FAVORING **VIRAL** ETIOLOGY



Features Arguing **AGAINST** Bacterial Pharyngitis

1

Conjunctivitis
(Adenovirus)



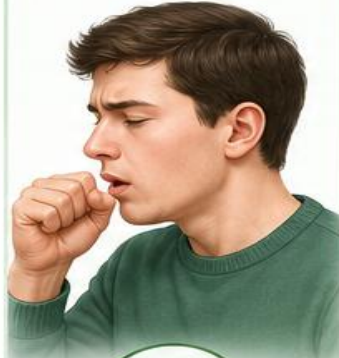
2

Coryza
(Runny nose)



3

Cough



4

Hoarseness



5

Stomatitis/
Oral Ulcers
(HSV/Coxsackie)



6

Diarrhea



7

Viral Exanthem
(Rash)



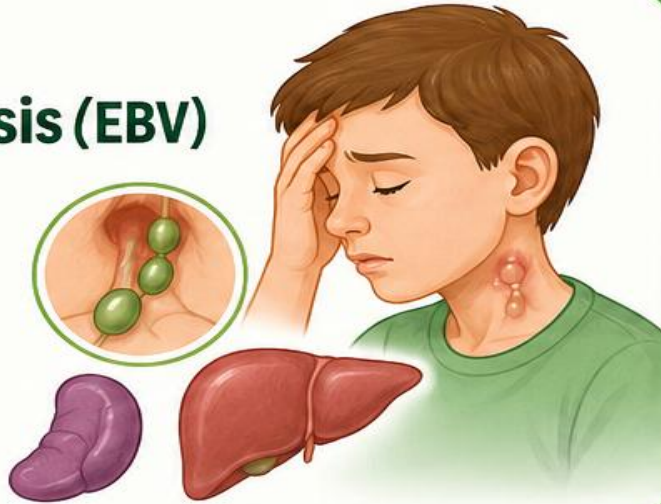




Specific Clinical Syndromes in Pediatric Sore Throat

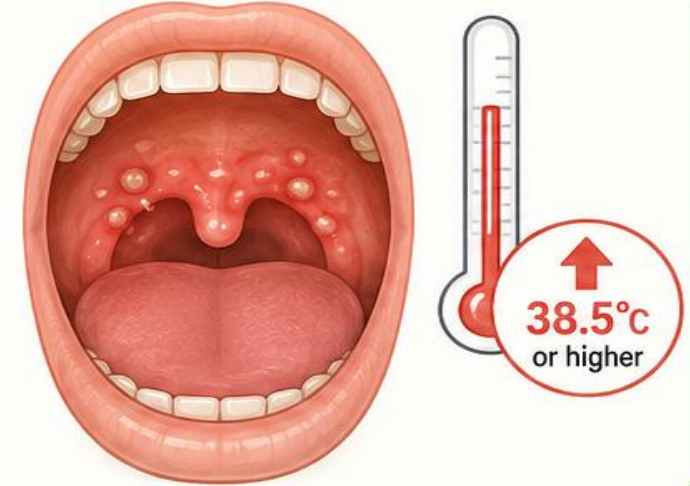
1 Infectious Mononucleosis (EBV)

- Diffuse exudate
- Posterior cervical lymphadenopathy
- Hepatosplenomegaly
- Fatigue



2 Herpangina (Coxsackie A)

- Small vesicles/ulcers
- Soft palate and uvula
- High fever



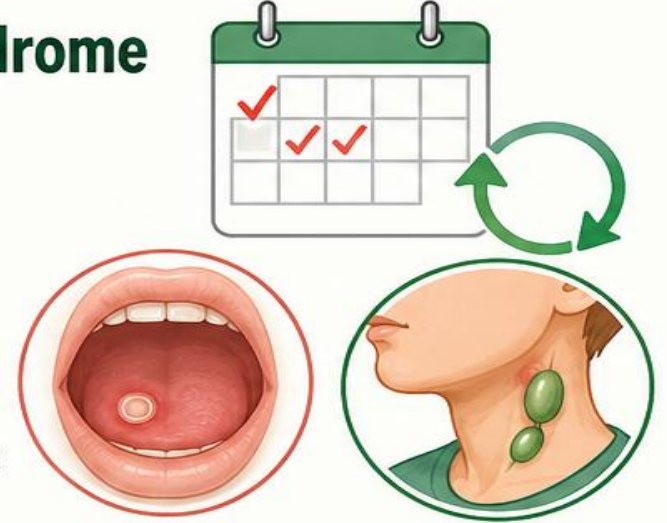
3 Herpetic Gingivostomatitis (HSV)

- Ulcers in anterior mouth
- Gums and lips involved
- Friable gums



4 PFAPA Syndrome

- Periodic fever
- Aphthous stomatitis
- Pharyngitis
- Adenitis
- Non-infectious, recurrent



Clinical Clues Suggesting GAS (Strep Pharyngitis)

Typical Age	Onset	Symptoms	Physical Exam
 5–15 years	 Acute / Sudden	severe sore throat fever headache abdominal pain, nausea, vomiting	pharyngeal erythema and exudates Palatal petechiae enlarged tender anterior cervical lymph nodes uvular edema



Scarlatiniform Rash (Scarlet Fever)

 Sandpaper-like rash

Centor / McIsaac Score

Used to estimate likelihood of GAS; testing is usually required in children.

1 Point Each



Absence of cough



Swollen / tender anterior cervical nodes



Temperature > 38 C



Tonsillar exudates or swelling

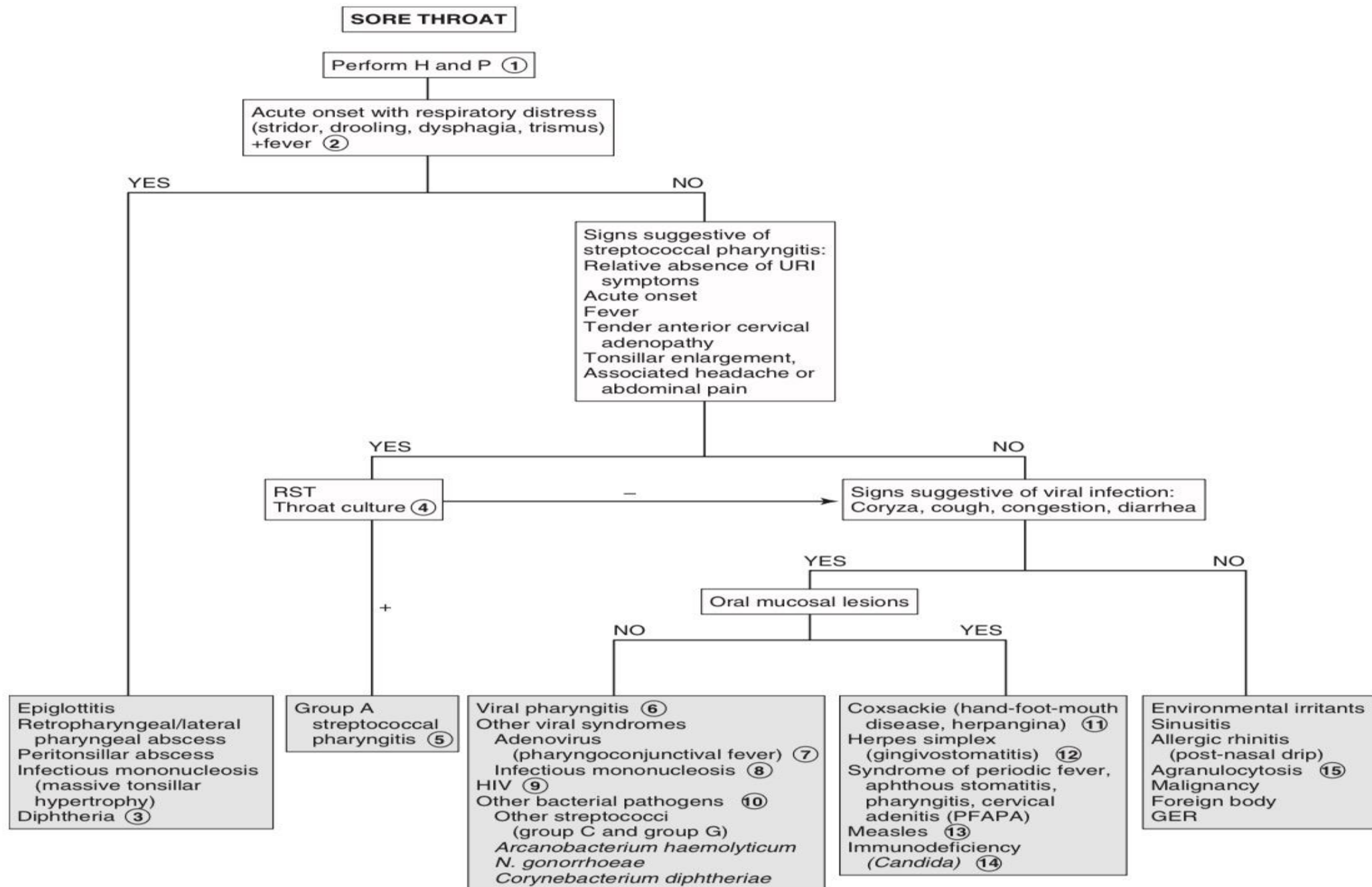


Age 3-14 years

Interpretation

Score ≤ 1 : No testing needed (Risk <10%)

Score ≥ 2 : Test indicated (RADT or Culture)



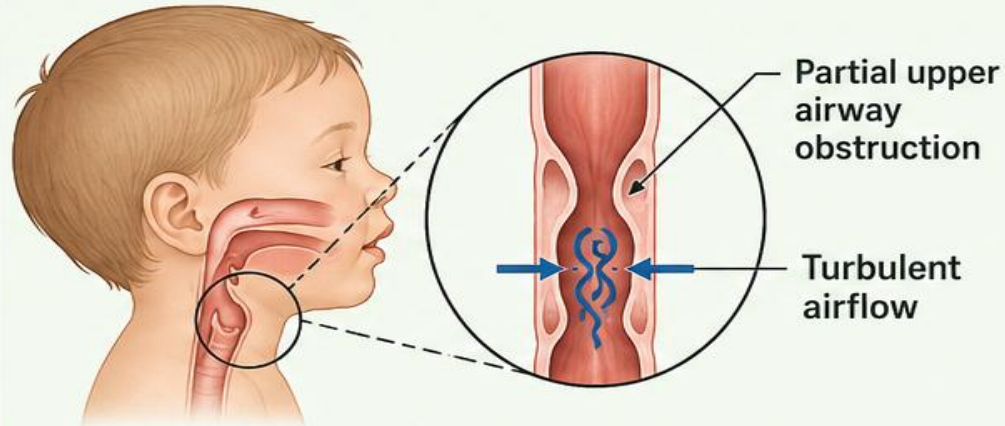
STRIDOR

DEFINITION

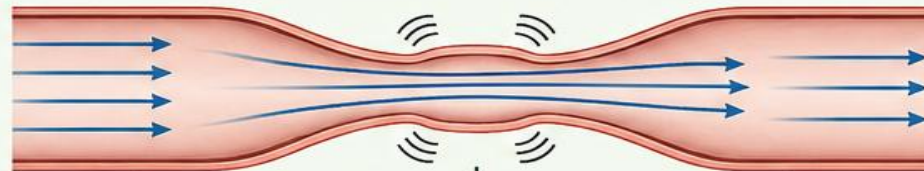


Harsh,
high-pitched
sound from
turbulent airflow.

MECHANISM



BERNOULLI PRINCIPLE

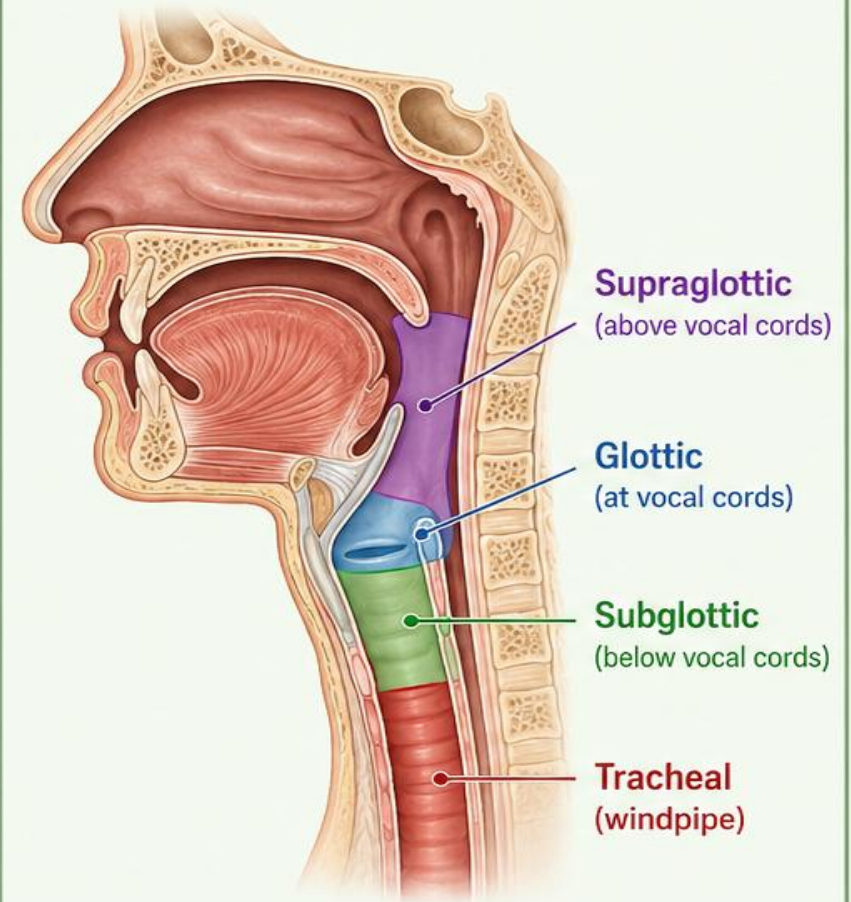


Velocity $\uparrow$
(faster airflow)

Pressure $\downarrow$
(lower pressure)

Wall vibration
(airway wall
vibrates/collapses)

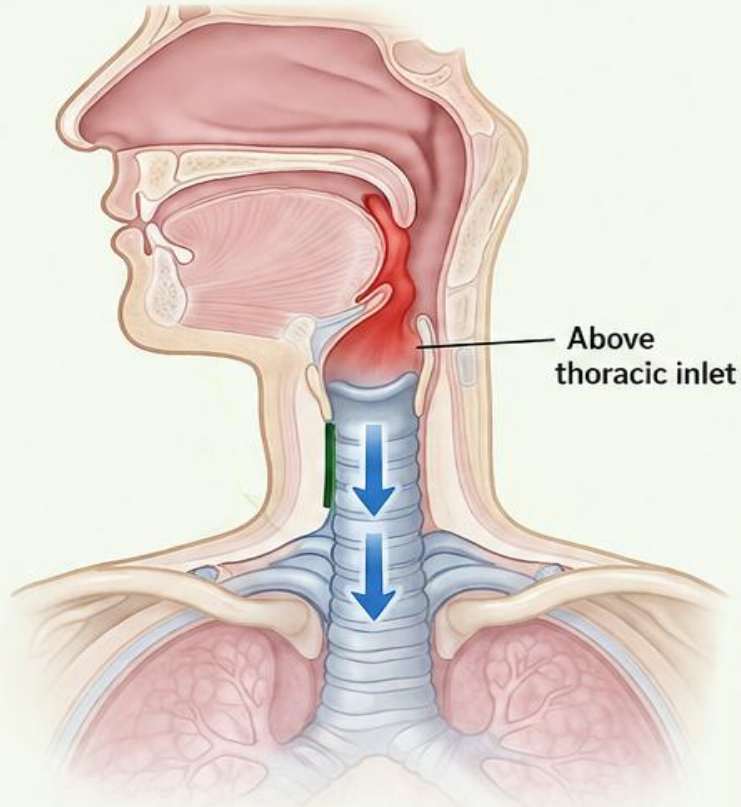
ANATOMY: UPPER AIRWAY LEVELS



Determining the Level of Obstruction

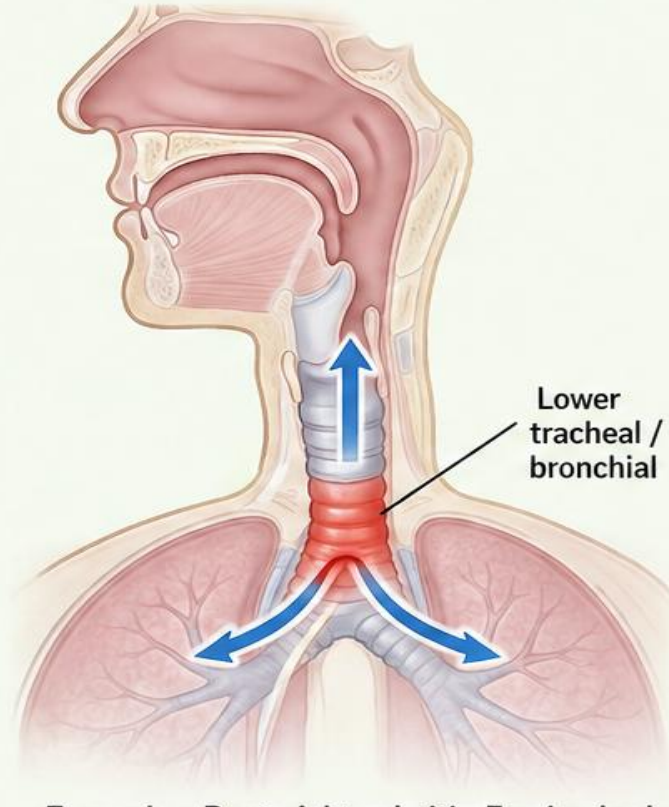
The phase of respiration provides the best clue to location.

Inspiratory Stridor



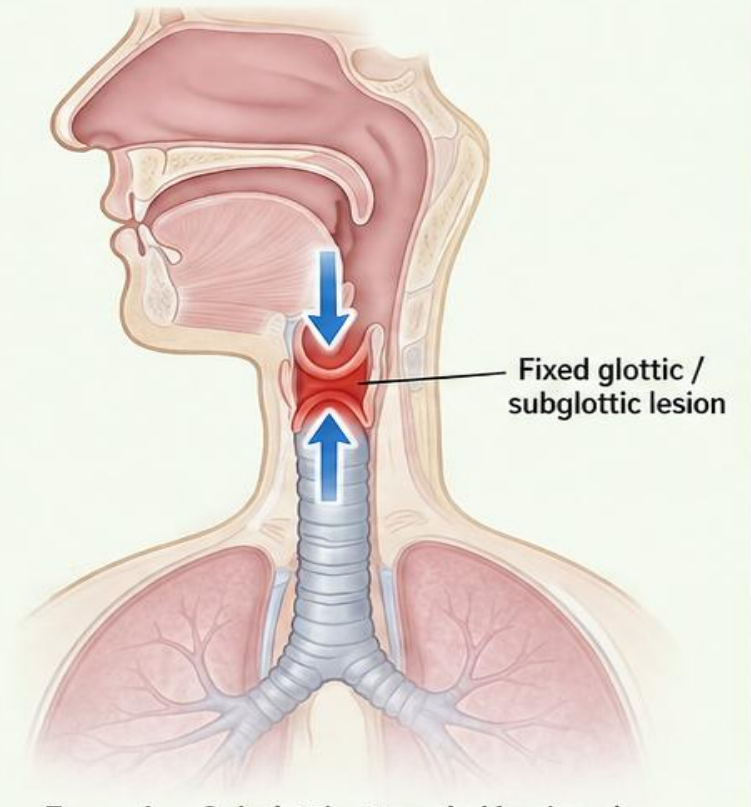
Examples: Laryngomalacia, Croup, Epiglottitis

Expiratory Stridor / Wheeze



Examples: Bacterial tracheitis, Foreign body, Tracheomalacia

Biphasic Stridor



Examples: Subglottic stenosis, Vocal cord paralysis, Laryngeal web



Inspiration Only
Upper Airway



Expiration Only
Lower Airway



Both Phases
Fixed Central Lesion

Stridor History Taking: Critical Questions

1 Age of Onset



Birth / Neonatal

→ Congenital causes



Laryngomalacia



Laryngeal webs



Vascular rings

Acute in Toddler / Child

→ Acquired causes



Croup



Epiglottitis



Foreign body



2 Duration / Progression



Acute

- Croup
- Foreign body
- Bacterial tracheitis



Chronic

- Laryngomalacia
- Subglottic stenosis

3 Associated Symptoms



Fever

→ Infectious cause



Drooling / Dysphagia

→ Epiglottitis,
Retropharyngeal abscess



Barking cough

→ Croup



Choking episode

→ Foreign body



Feeding issues

→ Vascular ring, GERD

4 Positional Changes



Worse when supine?

→ Laryngomalacia



Worse when agitated?

→ Subglottic hemangioma



Acute Stridor

Usually Infectious or Foreign Body

1

VIRAL CROUP (LARYNGOTRACHEOBRONCHITIS)



- Most common
- Barking cough
- Low-grade fever



2

EPIGLOTTITIS (SUPRAGLOTTITIS)



! MEDICAL EMERGENCY

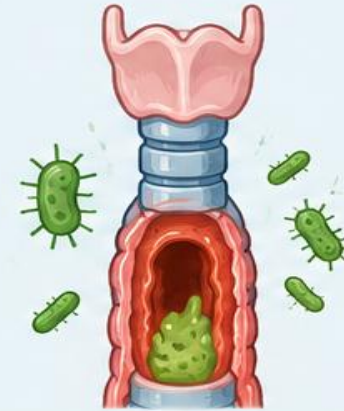
- Toxic appearance
- Drooling
- Tripod position



Rare now due to Hib vaccine

3

BACTERIAL TRACHEITIS



- “Croup that looks toxic”
- High fever
- Purulent secretions
- Poor response to croup therapy

4

RETROPHARYNGEAL ABSCESS



- Fever
- Stiff neck
- Drooling
- Muffled voice

5

FOREIGN BODY ASPIRATION



- Sudden onset in a toddler
- No fever initially

6

ANAPHYLAXIS



- Rapid onset
- Urticaria
- Hypotension

Chronic Stridor

Usually Congenital or Acquired Structural

1 Laryngomalacia

- ➔ Most common congenital cause



Inspiratory stridor worse with feeding, crying, supine
Resolves by 12–18 months

2 Subglottic Stenosis

- ➔ Congenital or acquired
- ➔ Often post-intubation



3 Vocal Cord Paralysis

- ➔ Birth trauma
- ➔ Cardiac surgery (PDA ligation)



3 Vocal Cord Paralysis

- ➔ Birth trauma
- ➔ Cardiac surgery (PDA ligation)



4 Vascular Rings

- ➔ Double aortic arch
- ➔ Compresses trachea + esophagus



5 Subglottic Hemangioma

- ➔ Worsens in first months
- ➔ Proliferative phase
- ➔ May be associated with cutaneous hemangiomas ("beard distribution")



Physical Examination in Stridor

Look, Don't Touch

If severe distress, defer exam and secure the airway.

General Appearance



Toxic?
Cyanotic?
Air hunger?

Respiratory Effort



Retractions
& Nasal Flaring



Skin

Hemangiomas
May Suggest
Airway Hemangioma



Posture



Tripod / Sniffing
Epiglottitis



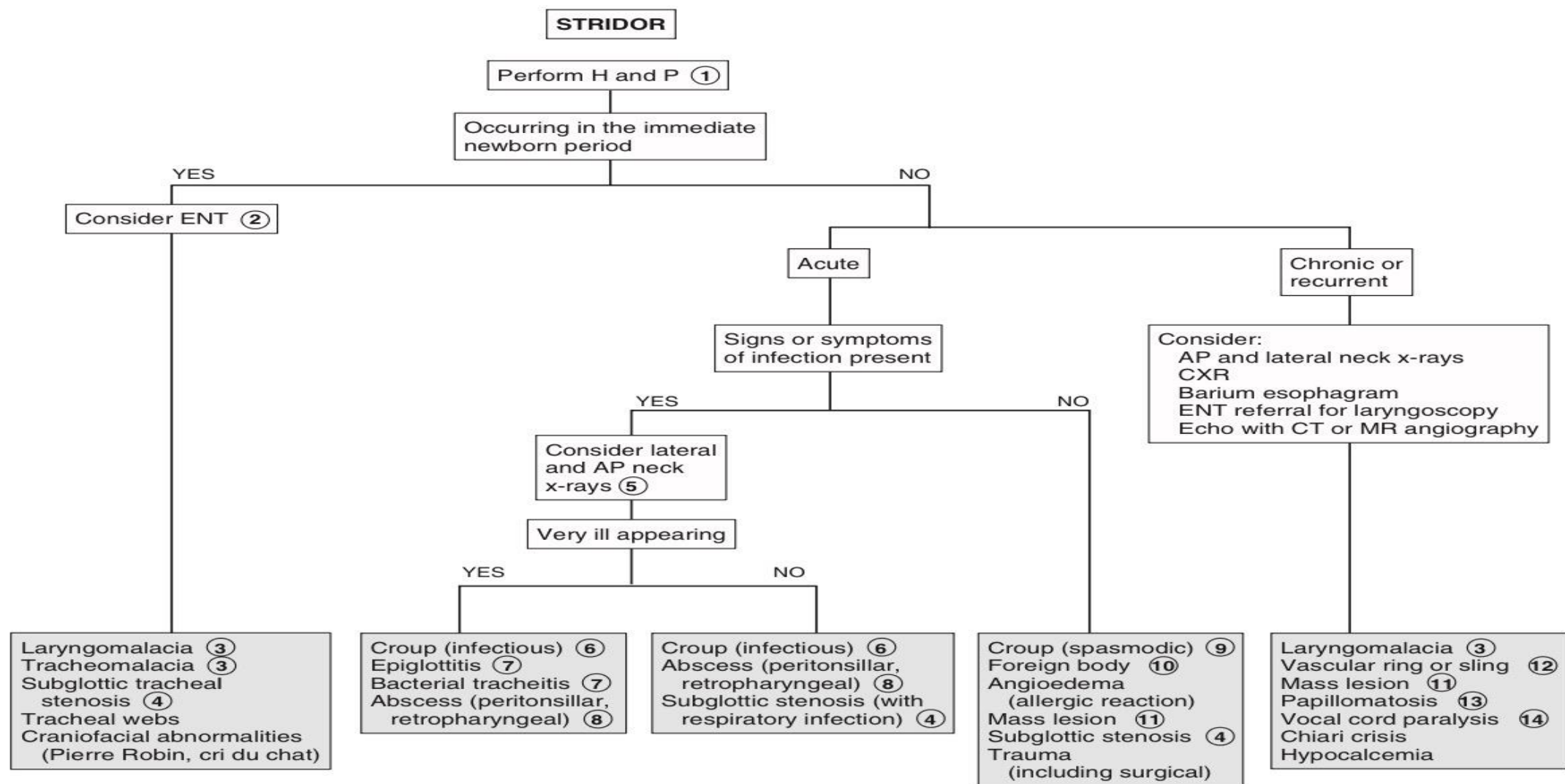
Opisthotonos
Vascular Ring / Abscess

Auscultation



Distinguish transmitted upper airway
sounds from true wheeze.

Check asymmetry (Foreign Body)



Thanks for your attention

