

Diagnostic approach to Acute & Chronic Cough In Children

Dr. Eshghi

Pediatric Pulmonologist





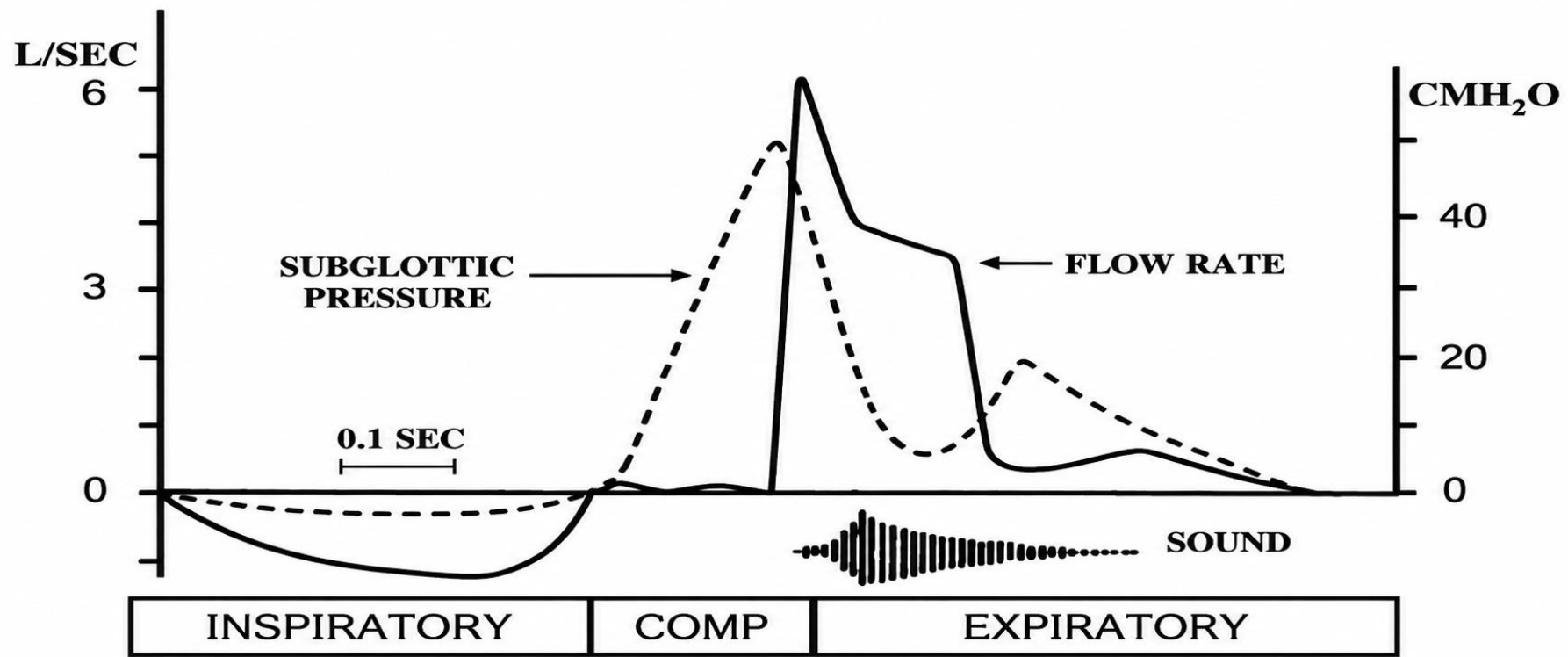
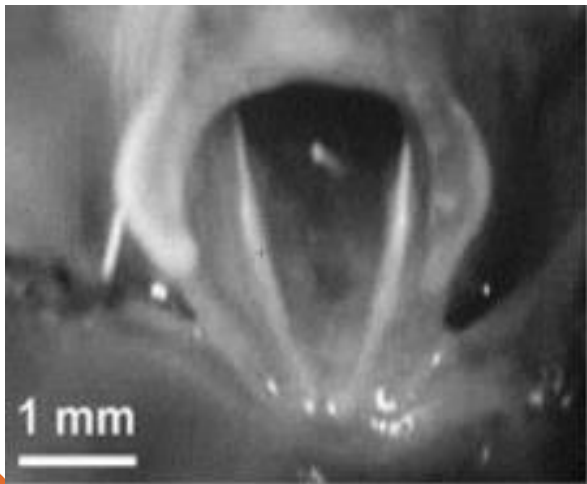
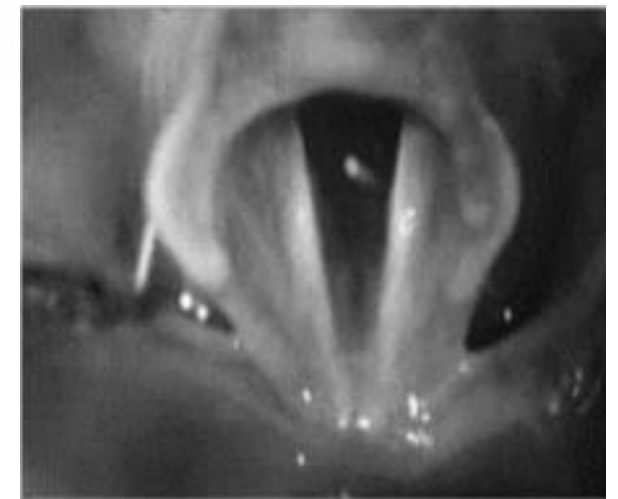
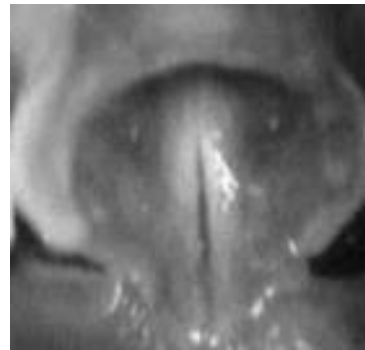


Figure 1. Phases of cough. (From McCool, 2006).



Insp



Exp

شرح حال و معاینه دقیق
تنها رمز موفقیت
تشخیص و درمان سرفه

- RESPIRATORY SYMPTOMS :
 - DYSPNEA,
 - RETRACTION,
 - COUGH,
 - CHEST PAIN,
 - WHEEZING,
 - SNORING,
 - APNEA,
 - CYANOSIS
- CHRONICITY,
- TIMING DURING DAY OR NIGHT,
- ASSOCIATIONS WITH : FEVER
 - ACTIVITIES INCLUDING EXERCISE
 - FOOD INTAKE
 - OTHER SYSTEMS,
- QUESTIONS RELATED TO:
 - CARDIAC,
 - GASTROINTESTINAL,
 - CENTRAL NERVOUS,
 - HEMATOLOGIC
 - IMMUNE SYSTEMS

QUESTIONS RELATED TO GASTROINTESTINAL REFLUX

CONGENITAL ABNORMALITIES (AIRWAY ANOMALIES, CILIARY DYSKINESIA OR IMMUNE STATUS)

FAMILY HISTORY

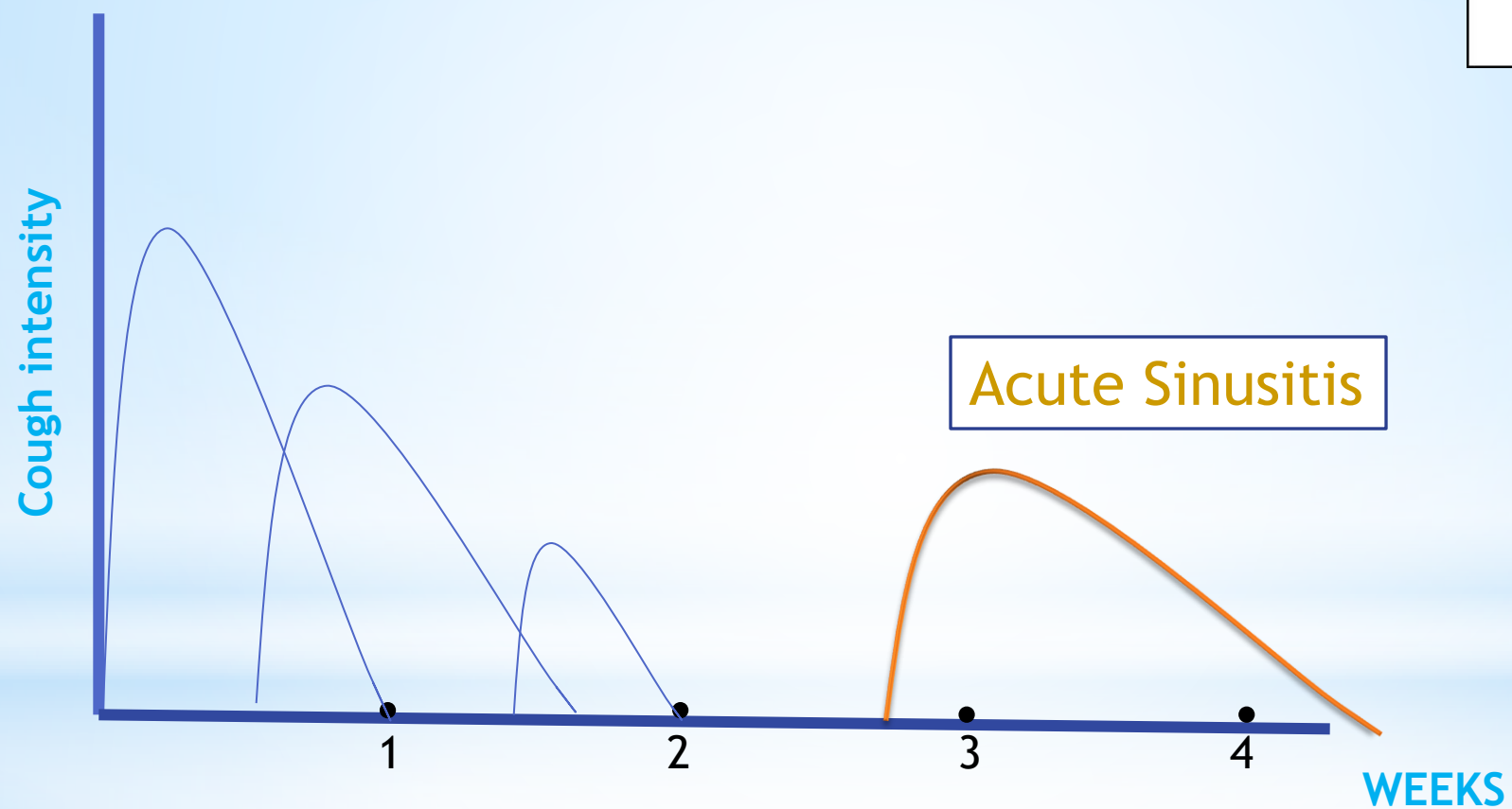
PARENTS

SIBLINGS

OTHER CLOSE RELATIVES WITH SIMILAR SYMPTOMS OR

ANY CHRONIC DISEASE WITH RESPIRATORY COMPONENTS

Acute Cough



Acute Cough

**History & Physical
Examination**

Coryza & Fever

**Acute Respiratory
Infection**

Upper

**Common Cold/Croup
Tracheitis/RhinoSinosistis**

Lower

**Bronchitis/olitis
Pneumonia
Asthma**



Acute Cough



History & Physical Examination

Acute Onset
& Chocking

Allergic
salute/clearing
throat

III/
Chest Deformity/
Clubbing/Cyanosis

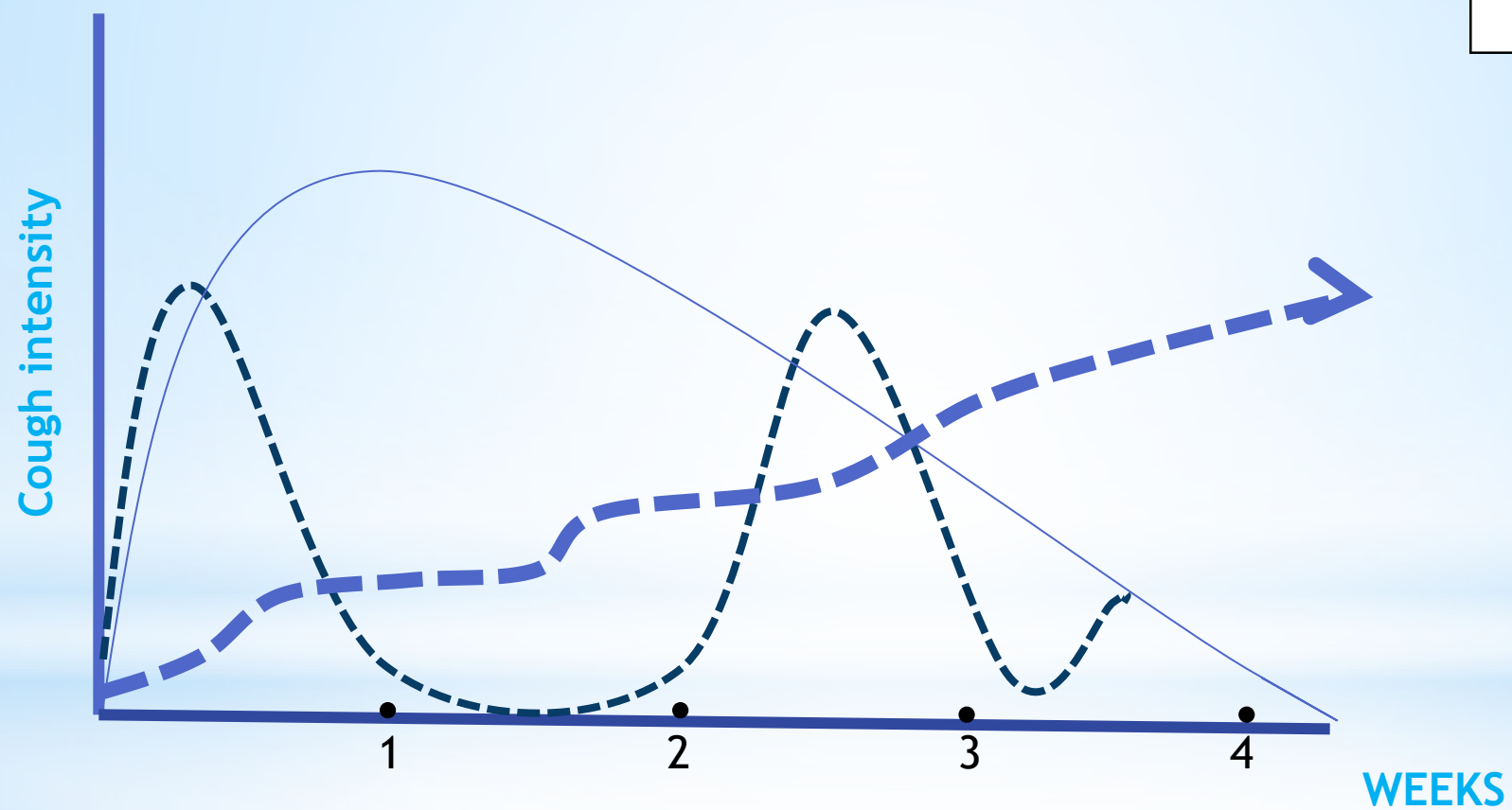
F B
Aspiration

Seasonal
allergic Rhinitis

First
Presentation of
Chronic Disease

Bronchoscopy

- Acute Cough With Delayed Recovery
- - - Recurrent Acute Cough
- - - Persistent Non-remitting cough



Chronic Cough in Children



DEFINITION

Cough lasting for > 4 ws

Cough related to acute URTI

resolves within 1 to 3 w

10% > 25 days

Chronic Cough in Children

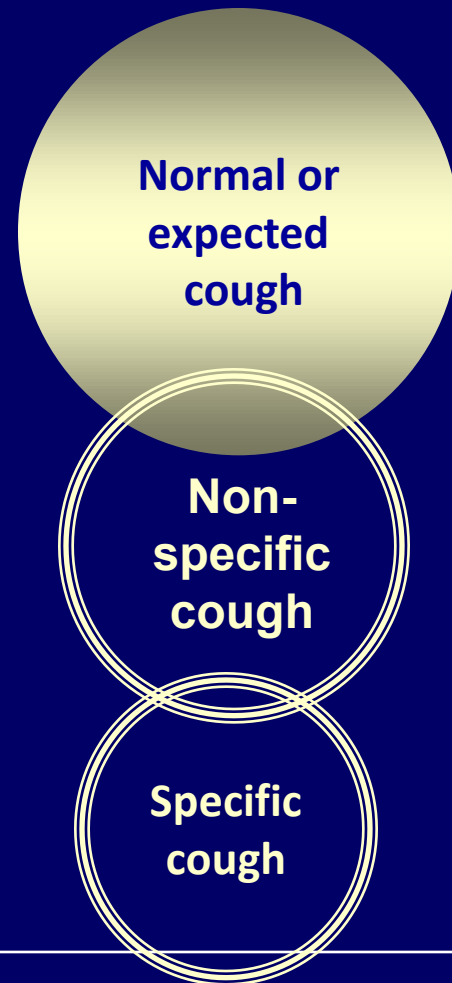


**Normal or
expected
cough**

**Non-
specific
cough**

**Specific
cough**

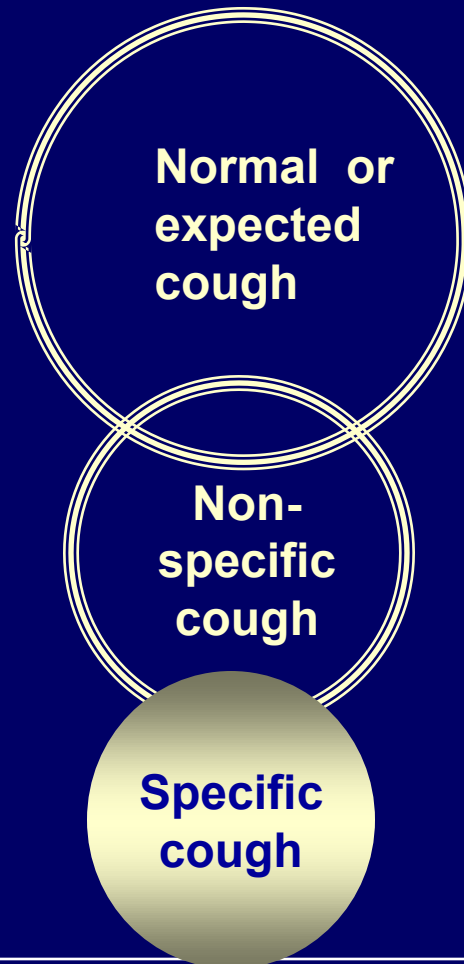
Chronic Cough in Children



Normal but unlucky child

- ✓ *6-10 URT infections/ yrs : common*
- ✓ *Growth, development : N*
- CxR, ph exam between episodes : N*
- No family history of severe infections*
- No serious extrapulmonary infections*
- ✓ *Reassurance parents*

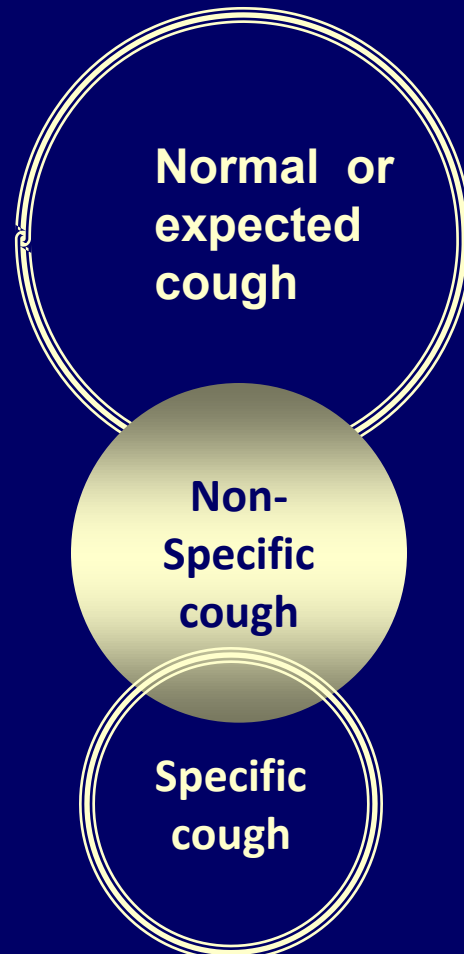
Chronic Cough in Children



Presence of specific pointers

Symptoms and signs of an underlying
respiratory or systemic disease

Chronic Cough in Children



**Absence of identifiable
respiratory disease or known
aetiology**

Most :

No serious aetiology

Post viral cough

Chronic Cough in Children

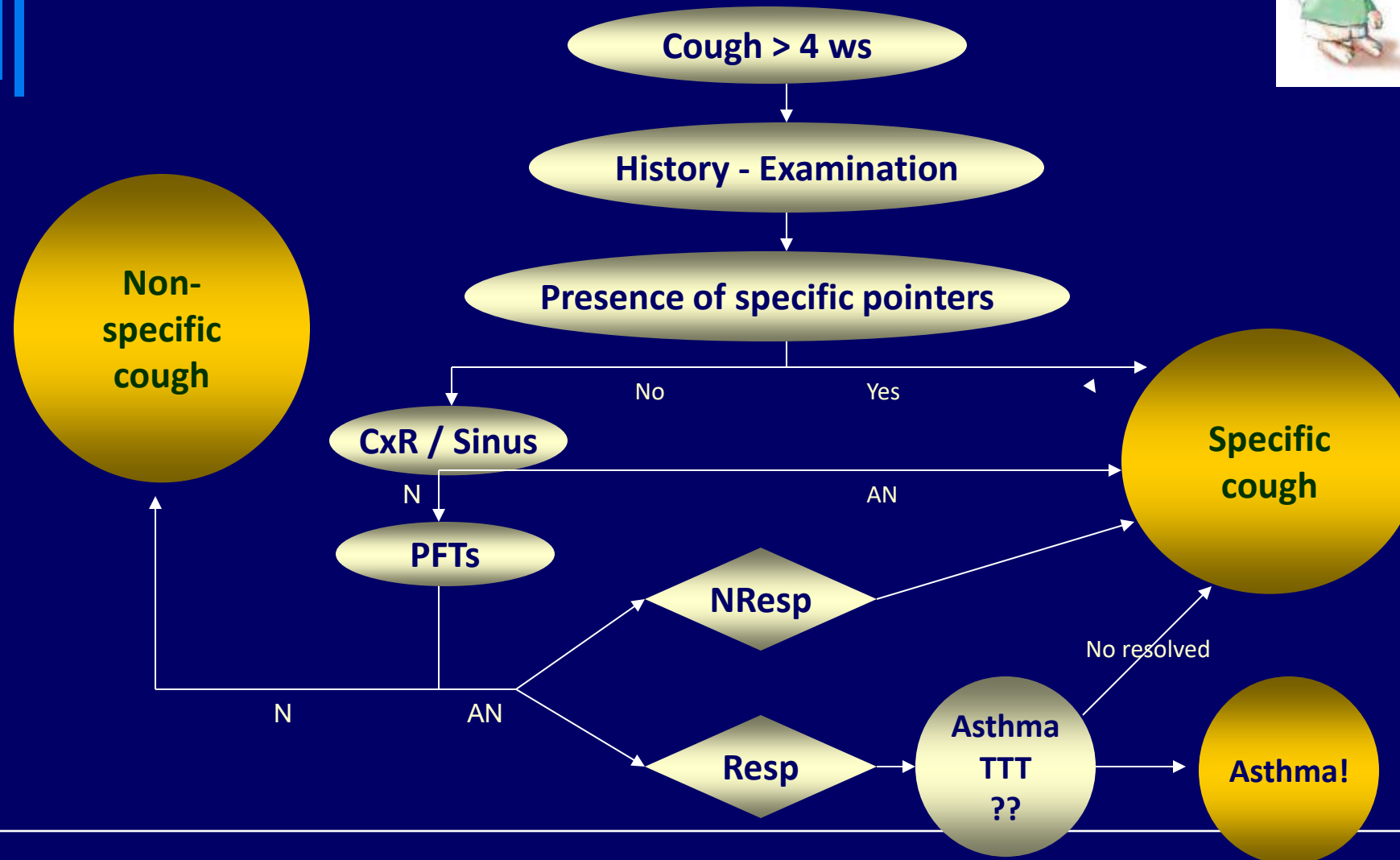


EVALUATION OF PATIENTS

Age of onset : *specific causes may uniquely affect certain age ranges*

Infancy	Early childhood	Late childhood
GER Infection Congenital malformation Passive smoking Environmental pollution Asthma	Post viral AHR Asthma Passive smoking GER Foreign body Bronchiectasis	Asthma PND Smoking TB Bronchiectasis Psychogenic cough

Chronic Cough in Children



Chronic Cough in Children



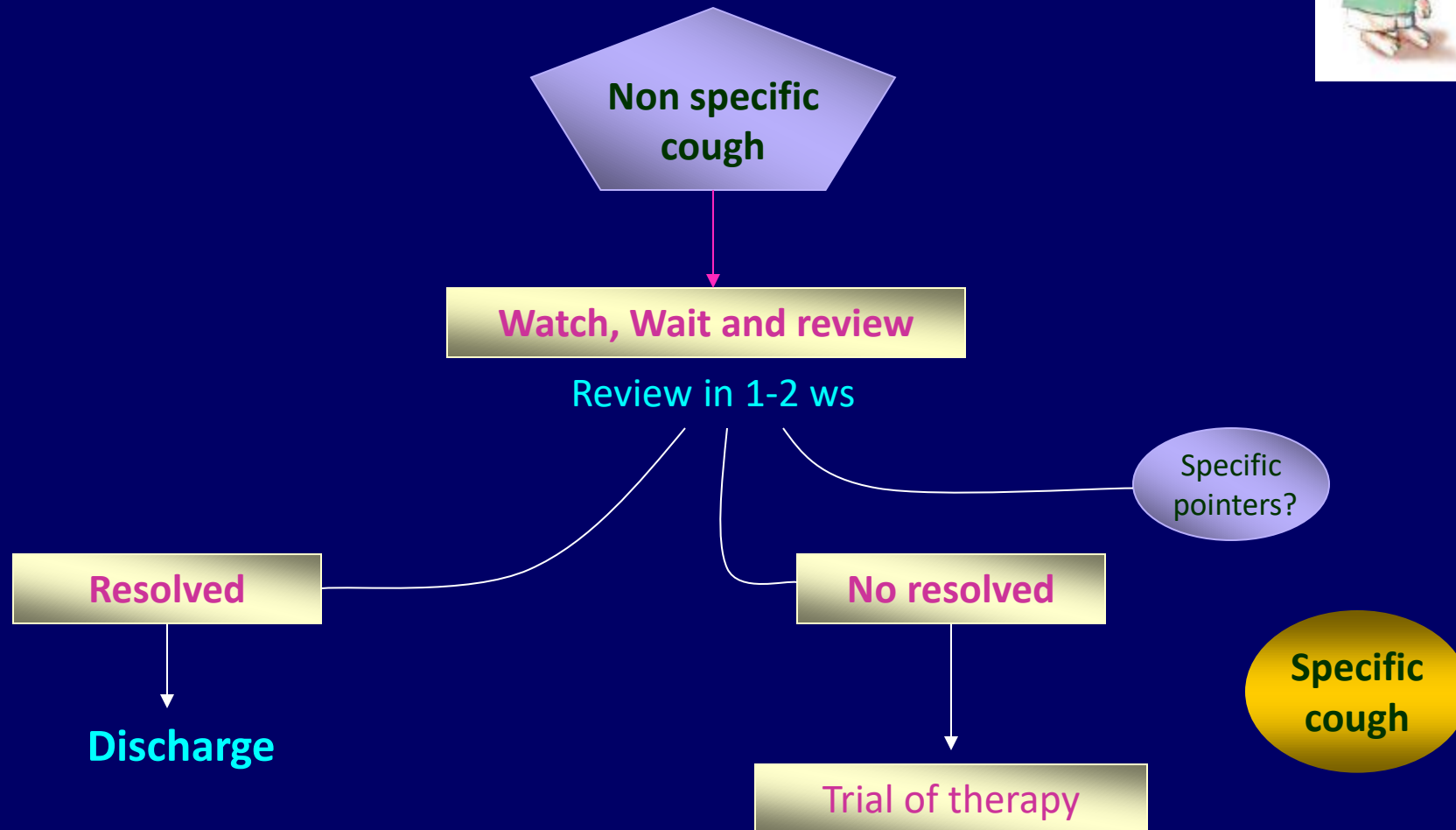
Non specific cough

Watch, Wait and review

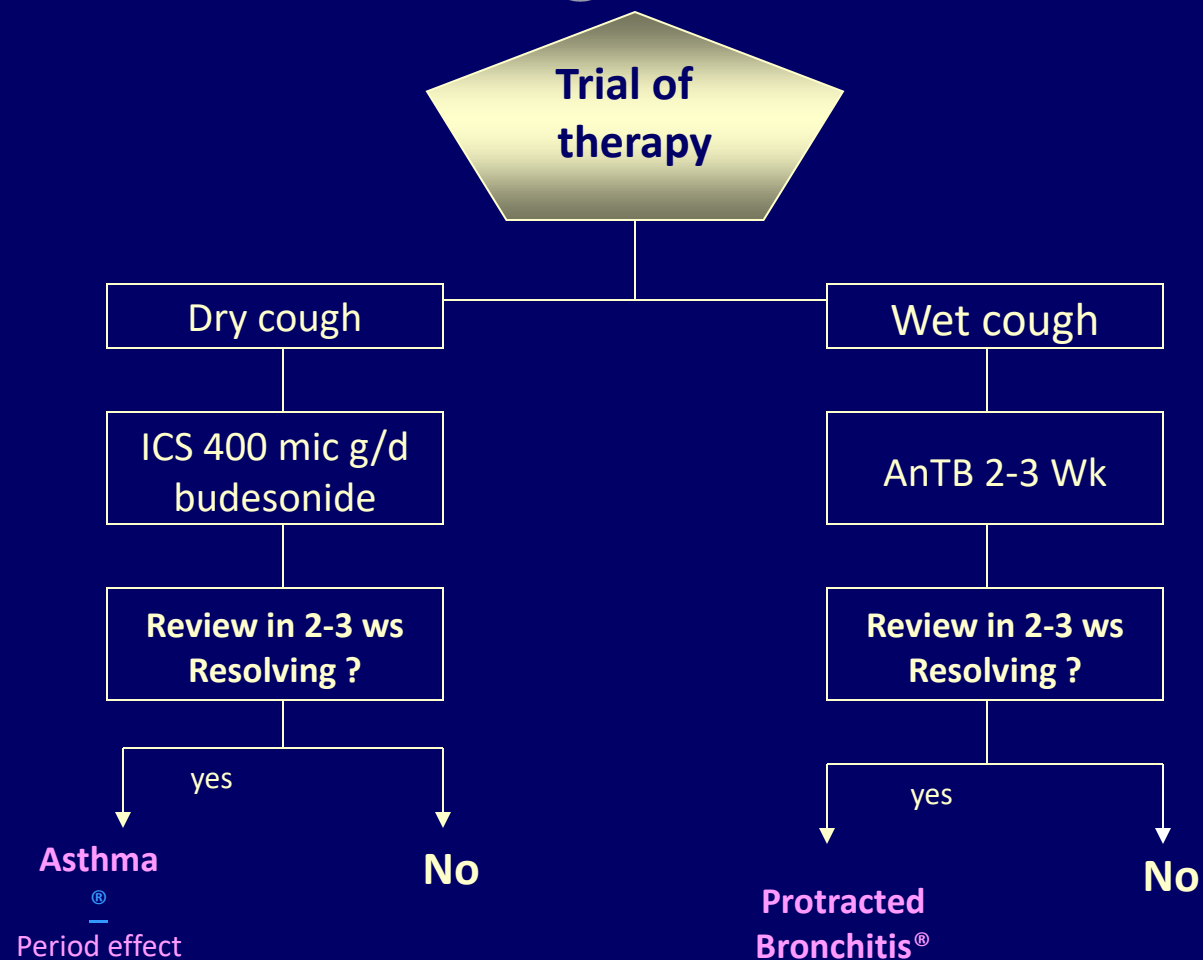
Review in 1-2 ws[®]

- Usually postinfectious cough
- GER D ??
- Missed Foreign body inhalation
- Nonasthmatic eosinophilic bronchitis
- Medication : ACE, IS, ICS
- Environmental irritant : smoke, Air pollution(O₃, SO₂, NO₂, V exhaust)

Chronic Cough in Children



Chronic Cough in Children



Chronic Cough in Children



If necessary

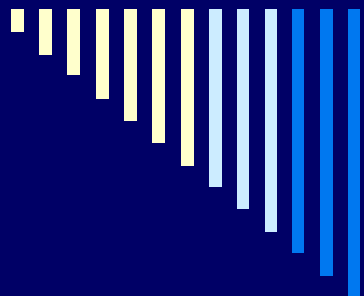
- ✓ CBC, ESR, Sweat test, Immune work up
- ✓ Sinus radiography
- ✓ CxR (inspi, expi)
- ✓ CT chest with mediastinal window
- ✓ Ba swallow, PH monitor

Chronic Cough in Children

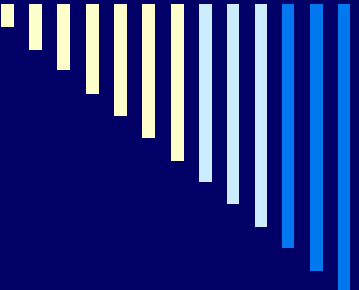


EVALUATION OF PATIENTS

- ✓ **Personal history** : Neonatal problem, feeding H, allergy H, previous infection or illness, vaccination, *Growth, development, appetite, activity*
- ✓ **Family history** : *atopy, CF, ID*
- ✓ **Quality** : *nonproductive (dry) , productive (wet)*
- ✓ **Timing** : *supine position, nocturnal, upon awakening*
- ✓ **Trigger factors** : *Exercise, temperature changes seasonal variation*
- ✓ **Previous therapy**
- ✓ **Environmental factors** : Smoke, pets
- ✓ **Physical examination**



CHARACTERISTIC	THINK OF
Staccato, paroxysmal	Pertussis, cystic fibrosis, foreign body, <i>Chlamydia</i> spp., <i>Mycoplasma</i> spp.
Followed by "whoop"	Pertussis
All day, never during sleep	Habit cough
Barking, brassy	Croup, habit cough, tracheomalacia, tracheitis, epiglottitis
Hoarseness	Laryngeal involvement (croup, recurrent laryngeal nerve involvement)
Abrupt onset	Foreign body, pulmonary embolism
Follows exercise	Reactive airway disease
Accompanies eating, drinking	Aspiration, gastroesophageal reflux, tracheoesophageal fistula
Throat clearing	Postnasal drip, vocal tic
Productive (sputum)	Infection, cystic fibrosis, bronchiectasis
Night cough	Sinusitis, reactive airway disease, gastroesophageal reflux



Seasonal

Allergic rhinitis, reactive airway disease

Immunosuppressed patient

Bacterial pneumonia, *Pneumocystis jiroveci*, *Mycobacterium tuberculosis*, *Mycobacterium avium-intracellulare*, cytomegalovirus

Dyspnea

Hypoxia, hypercarbia

Animal exposure

Chlamydia psittaci (birds), *Yersinia pestis* (rodents), *Francisella tularensis* (rabbits), Q fever (sheep, cattle), hantavirus (rodents), histoplasmosis (pigeons)

Geographic

Histoplasmosis (Mississippi, Missouri, Ohio River Valley), coccidioidomycosis (Southwest), blastomycosis (North and Midwest)

Workdays with clearing on days off

Occupational exposure

Chronic Cough in Children



Cough specific pointers

Signs, symptoms of underlying Dz

Cough characteristics

Barking or brassy cough : croup, tracheomalacia

Cough productive casts : plastic bronchitis

Paroxysmal (with or without whoop) : pertussis, parapertussis

Staccato : chlamydia in infants

Honking : psychogenic

specific cough pointers

Auscultatory findings

Wheeze	intrathoracic airway lesions (<i>eg</i> , tracheomalacia, asthma);
Crepitations,	any airway lesions (from secretions), or parenchyma disease (ILD)

Cardiac abnormalities

Associated airway abnormalities, cardiac failure

Chest pain

Arrhythmia, asthma

Dyspnea or tachypnea

Any pulmonary airway or parenchymal disease

Chest wall deformity

Any pulmonary airway or parenchymal disease

Digital clubbing

Suppurative lung disease

Moist or productive cough

Suppurative lung disease

Exertional dyspnea

Any airway or parenchymal disease

specific cough pointers

Failure to thrive	Any serious systemic including pulmonary illness e.g. CF
Feeding difficulties	Any serious systemic including pulmonary illness, aspiration
Hemoptysis	Suppurative lung disease, vascular abnormalities
Hypoxia/cyanosis	Any airway or parenchyma disease, cardiac disease
Immune deficiency	Suppurative lung disease or atypical infection
Neurodevelopmental abnormality	Aspiration lung disease
Recurrent pneumonia	Immunodeficiency, atypical infections, suppurative lung disease, congenital lung abnormalities,

Presence of specific cough pointers



Yes

NO



CXR &/or Sinus X & Spirometry abnormal



Yes

NO



Is the cough characteristic?



Yes

NO



Non-specific cough

Non-specific cough



Watch, wait and review

Usually post viral cough or acute bronchitis
Rarely FB inhalation, asthma,
upper airway disorders,
adverse events of medications,
GERD, ear problems

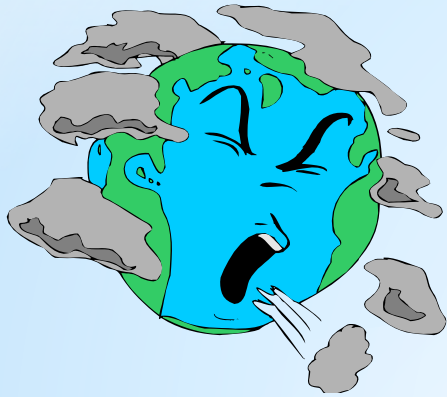


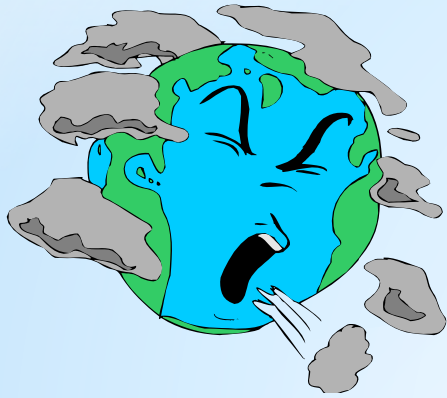
Evaluate

Tobacco smoke, Childs activity,
parental expectation
Treat any obvious illness above



Review in 1-2 weeks



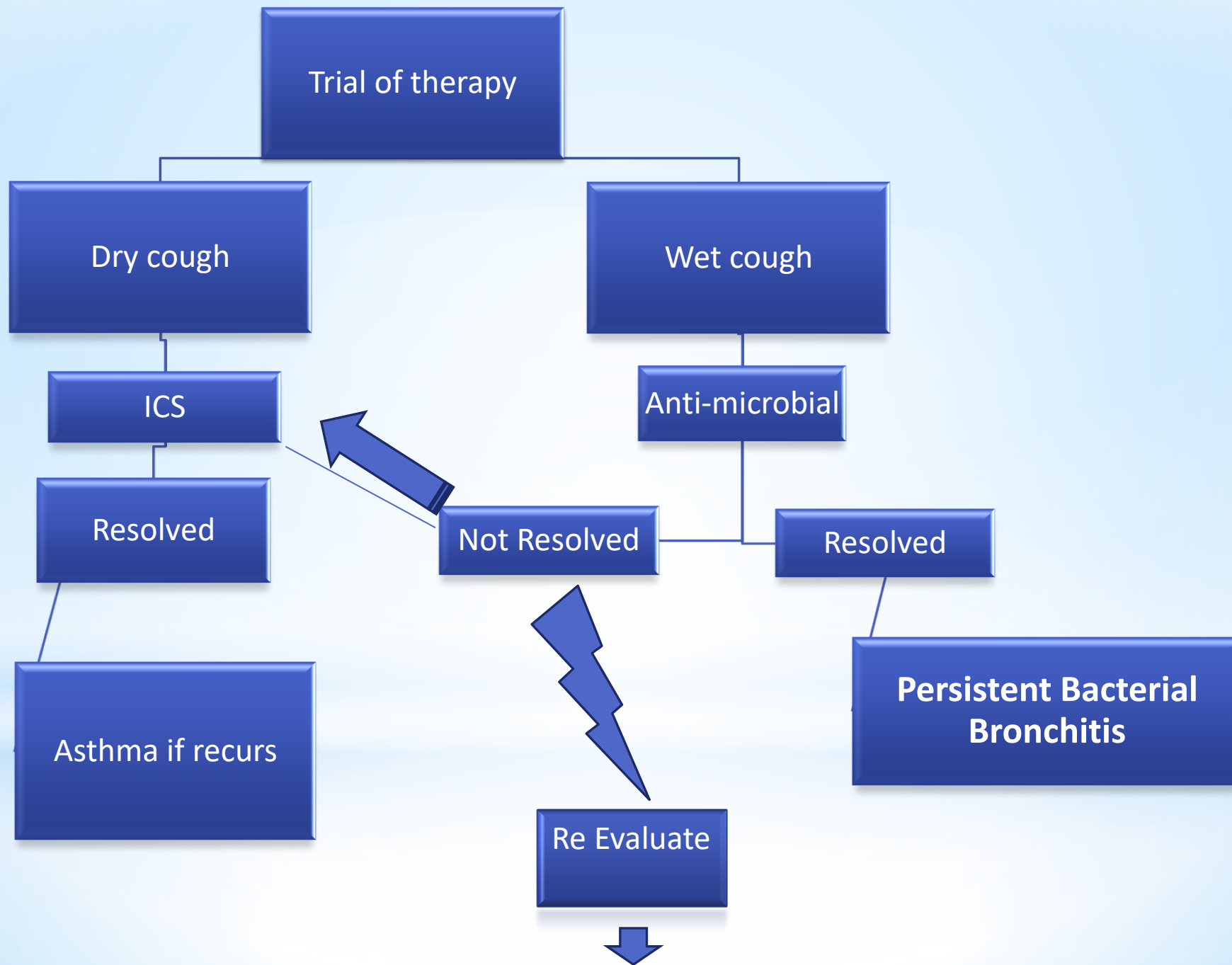


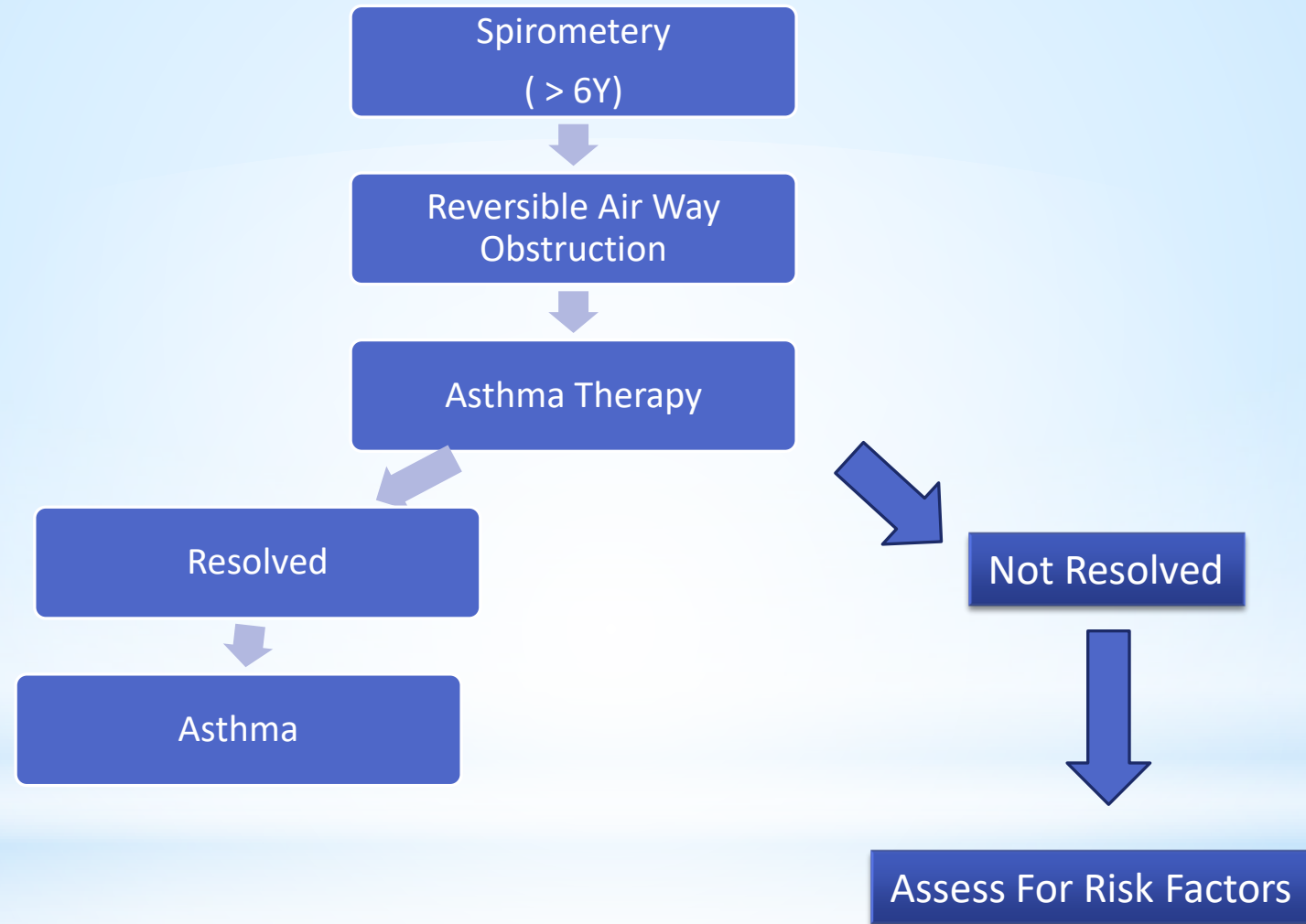
Persistent cough

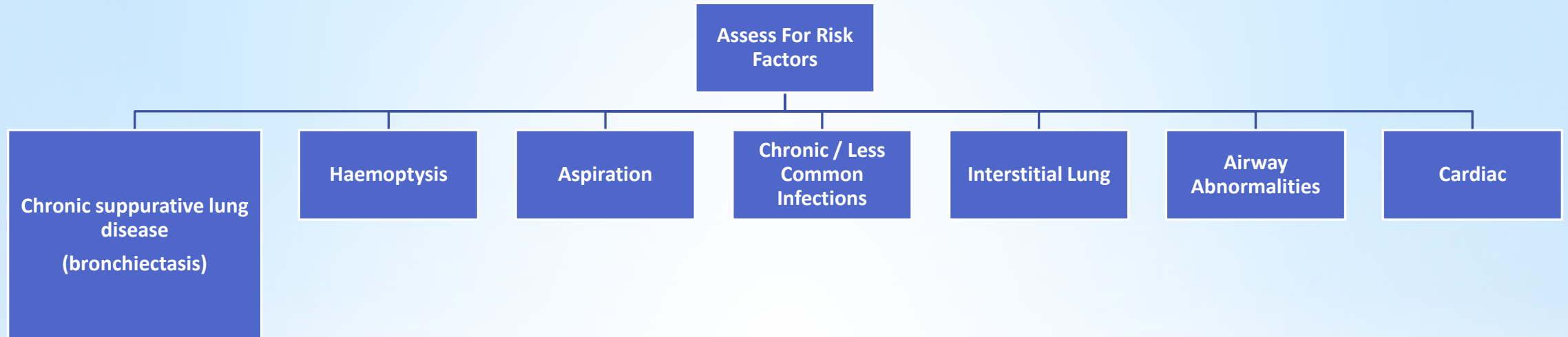
Discuss options with parents

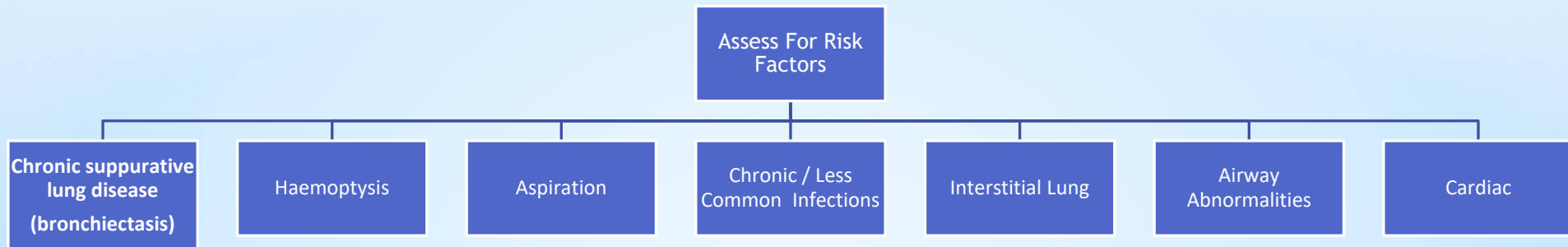
Watch, wait and
review approach

Trial of therapy





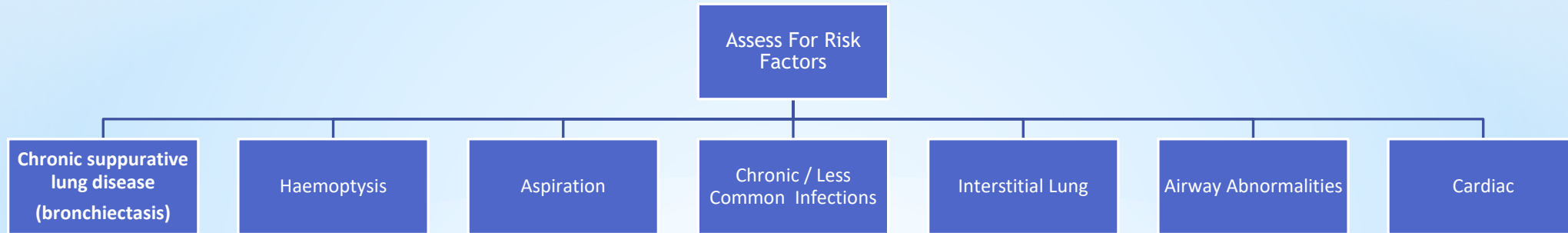




Chronic suppurative lung disease (bronchiectasis)

Aspiration
Congenital malformation
Cystic fibrosis
Primary ciliary dyskinesia
Sever Lung infection
Retained inhaled foreign body

Sweat test
Bronchoscopy
Cilia Study
Immune work up
HRCT chest
Barium Swallow



Haemoptysis



Cystic fibrosis
Other bronchiectasis
Retained inhaled FB
Tuberculosis
Tumors
Pulmonary
Hemosiderosis
Pulmonary A/V
malformation



Aspiration



Primary
Secondary
Neurologic abnormalities
Altered Swallow
Weak Cough Reflex
Neuromuscular Disease
Laryngeal Abnormalities
Tonsil adenoid Hypertrophy
TEF/ H type fistulas
Sever GERD



Ba Swallow
Bronchoscopy
& BAL
PH Meter
Milk Scan



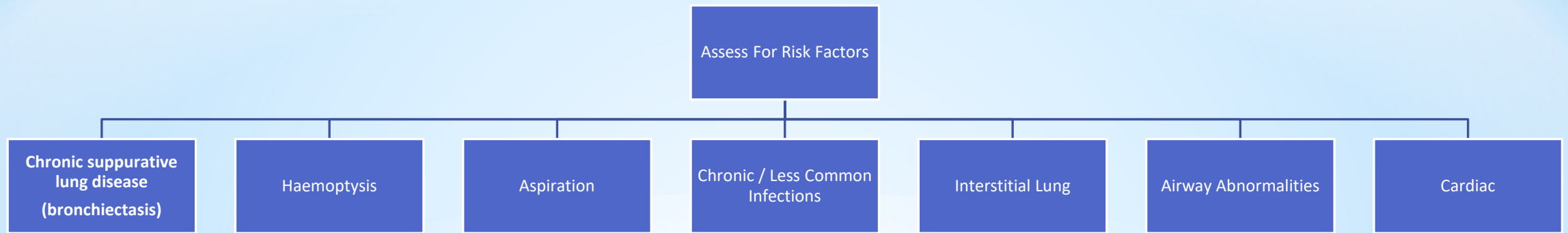
Chronic / Less Common Infections



TB
MOTT
Mycoses
Parasites



PPD
Bronchoscopy & BAL
HRCT Chest
Specific Tests



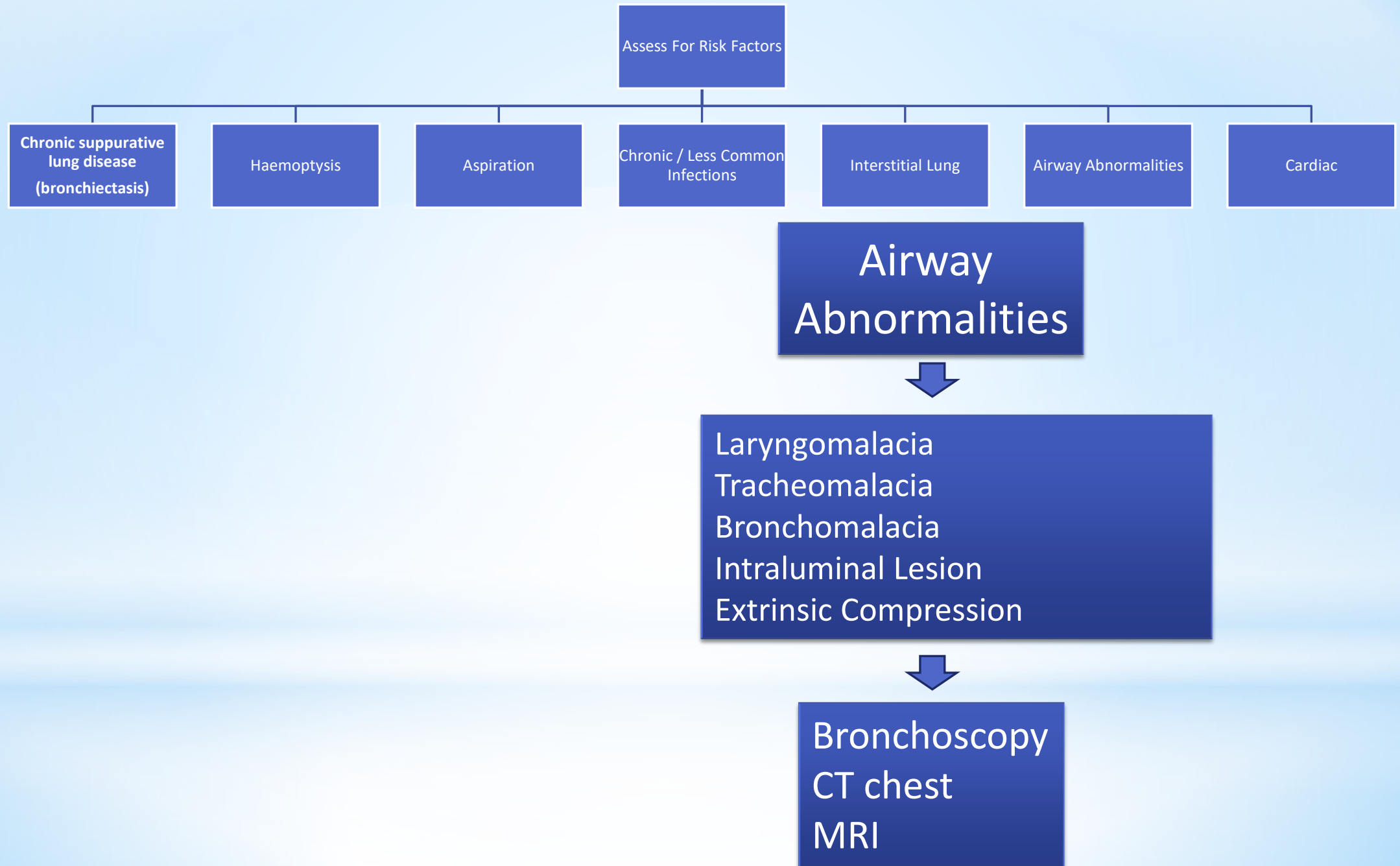
Interstitial Lung Diseases

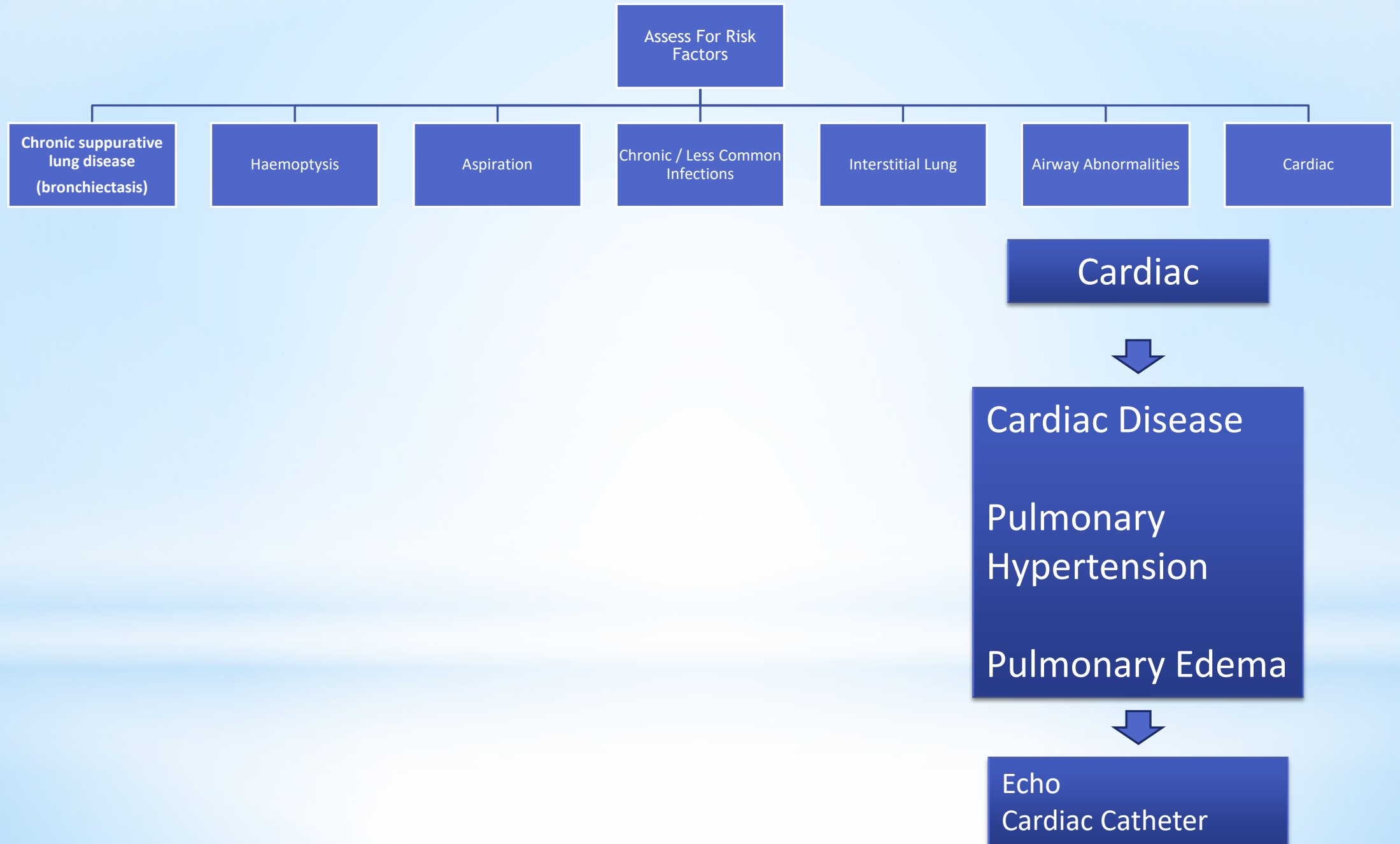


Rheumatoid Disease
Cytotoxic Drug
Radiation
Etc.



Auto immune markers
HRCT chest
Lung Biopsy





*Distribution of the Patients**

Diagnosis	Values*
Asthma plus asthma-like symptoms	27 (25)
Protracted bronchitis	25 (23.4)
UACS	22 (20.3)
Protracted bronchitis plus asthma-like symptoms	13 (12)
UACS plus asthma-like symptôme	8 (7.4)
GERD	5 (4.6)
Bronchiectasis	3 (2.7)
Natural recovery	2 (1.8)
Tuberculosis	1 (0.9)
Congenital malformation	1 (0.9)
Mycoplasma infection	1 (0.9)

*Values are given as No. (%).



"Expecting a busy winter, Hank?"

Thanks For Your Attention