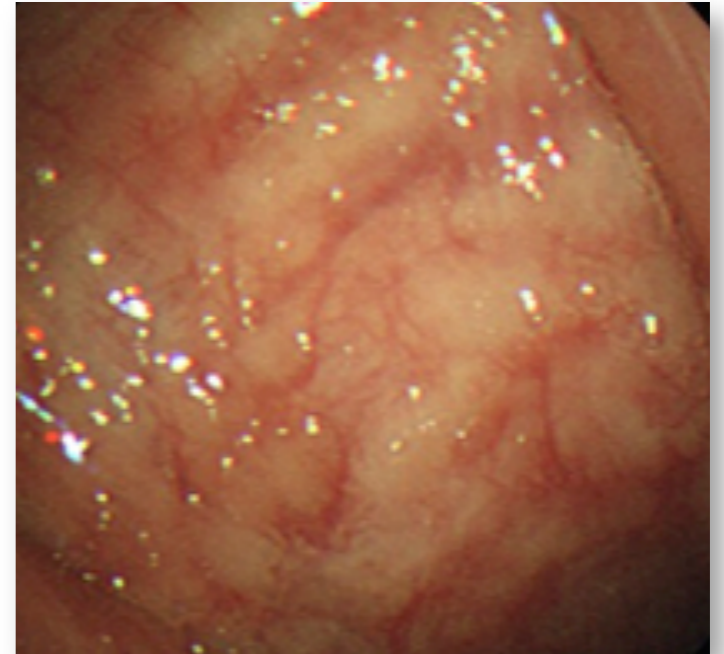
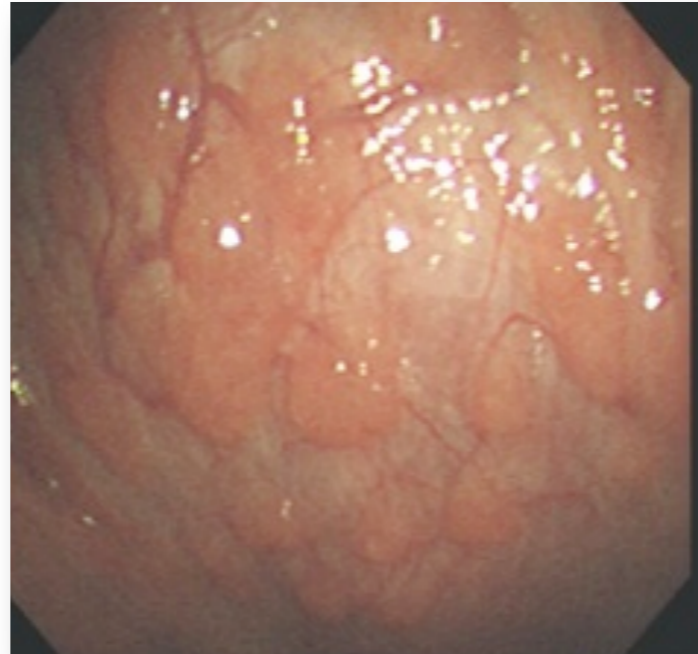


如果咳嗽神經過度敏感，  
下一步應該...

# 如果咳嗽神經過度敏感， 下一步應該...

請張開嘴巴檢查一下咽喉



# 咳嗽神經變得過度敏感

*(Positive Cough Challenge Test)*

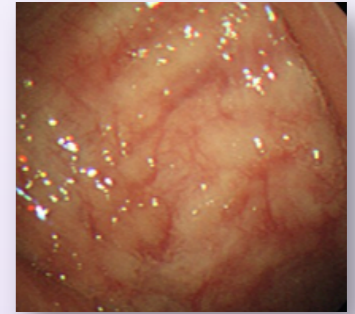


- **With throat mucosa abnormality**

- GERD (cobble stone)

- Mouth breathing (atrophic mucosa)

- Dry mouth (salivation)



- **Without mucosa abnormality**

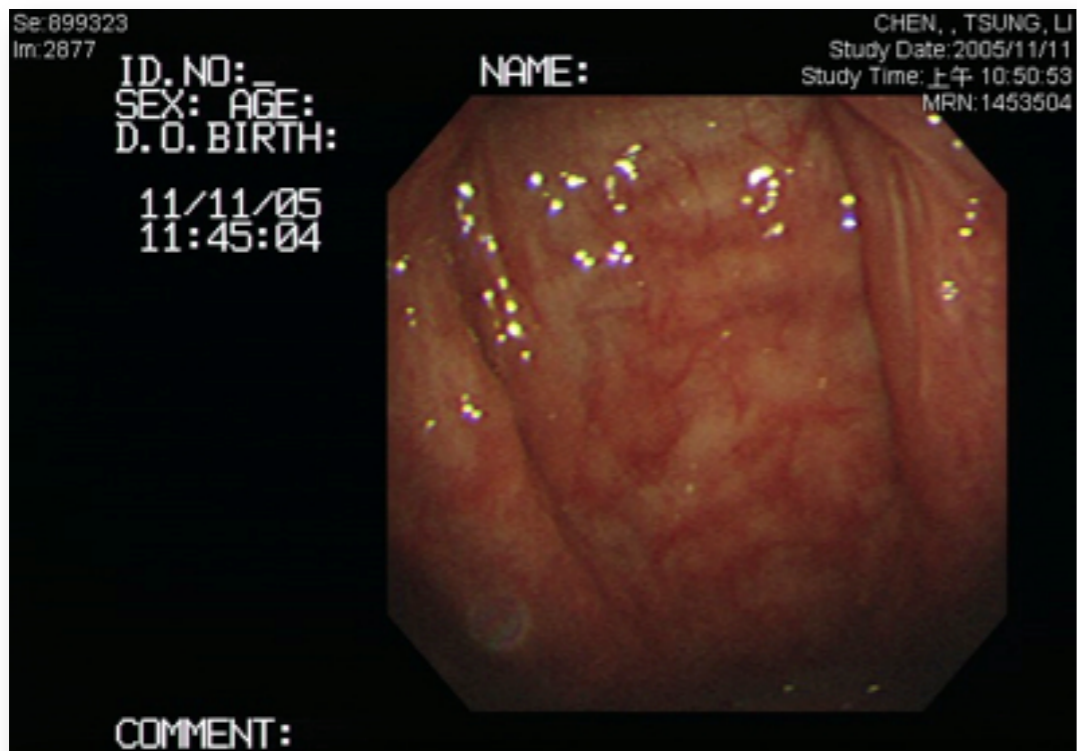
- Lower airway diseases

- Drug induced (ACEI)

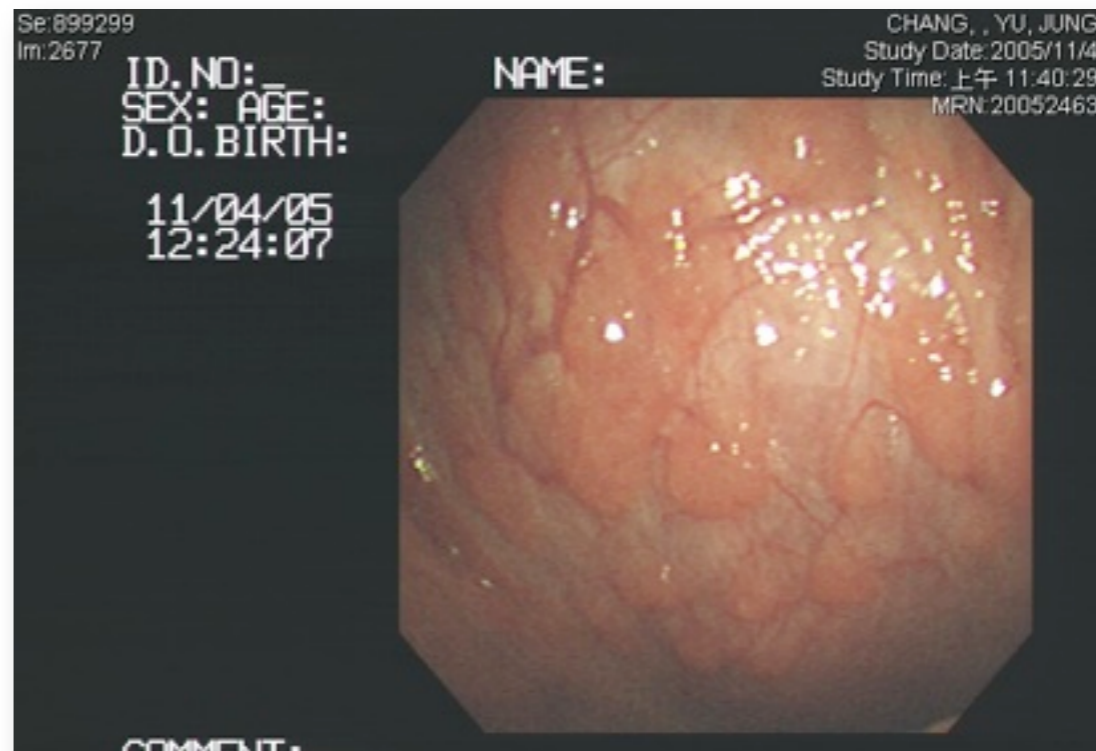
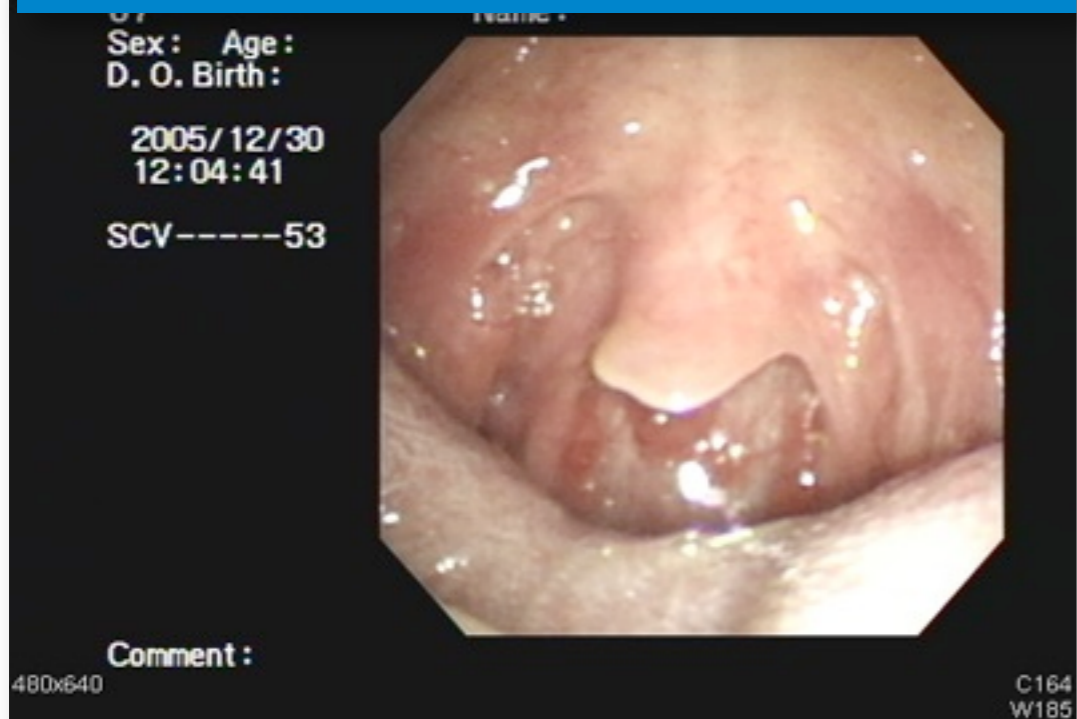
- Familial sensory hyper-reflex



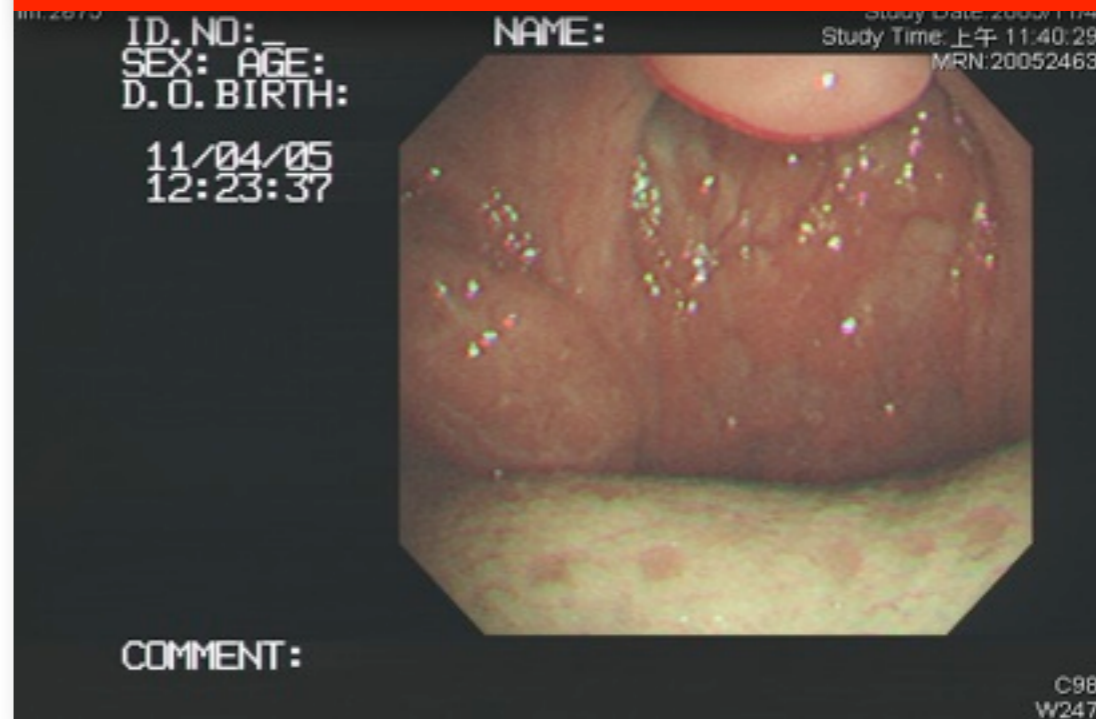
# 咽喉黏膜病變：外觀變化



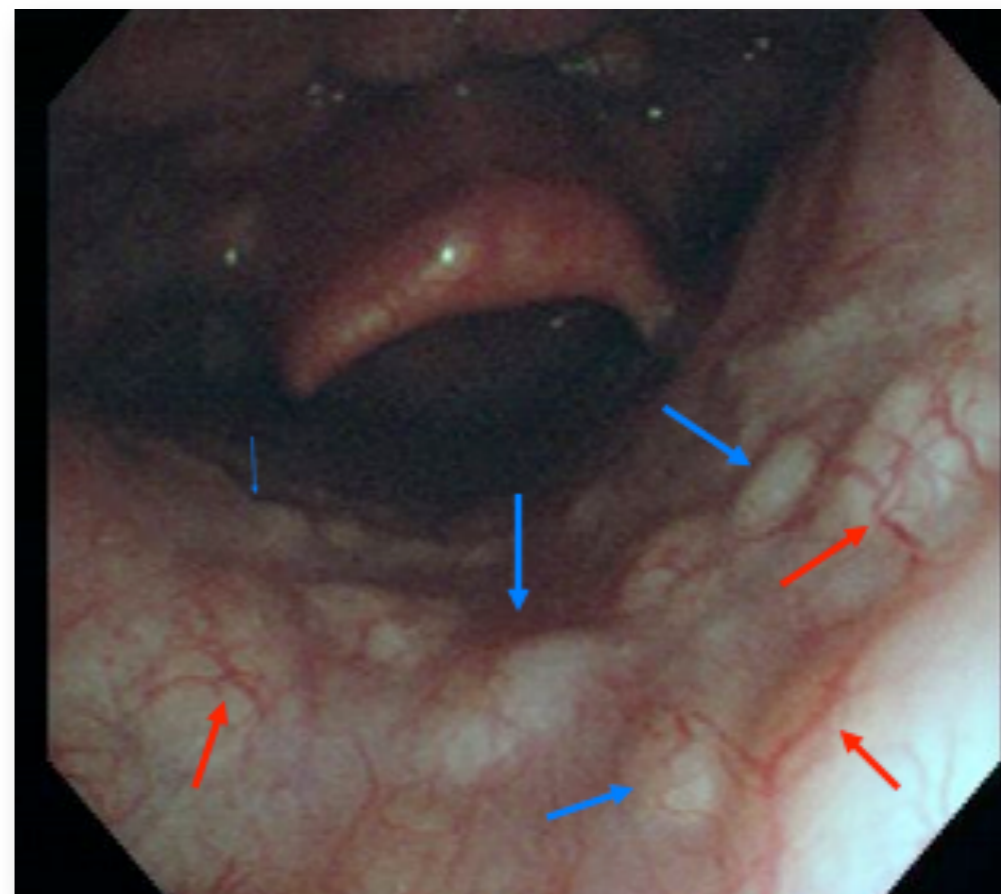
張口呼吸：Mouth Breathing



胃食道逆流：GERD

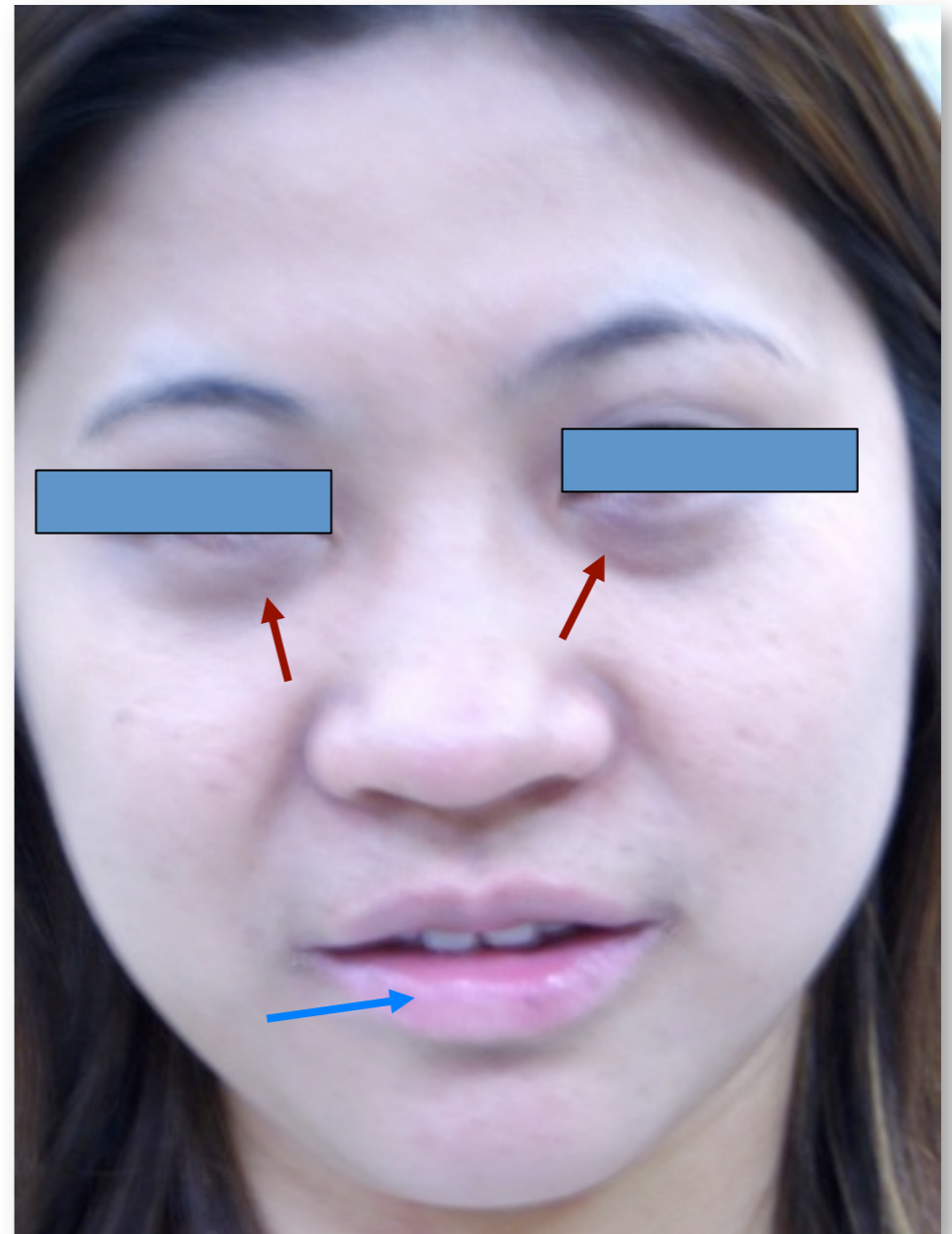
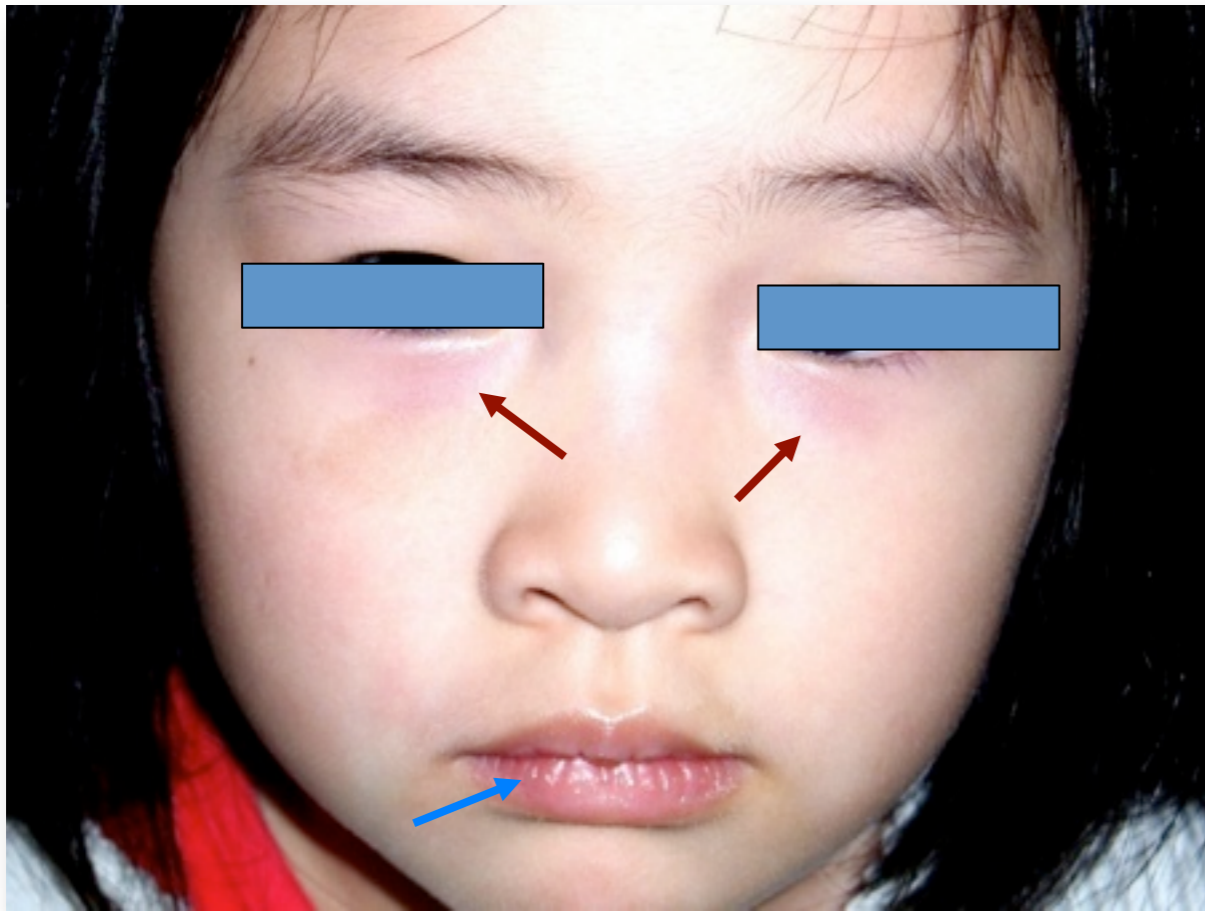


# 張口呼吸：Mouth Breathing



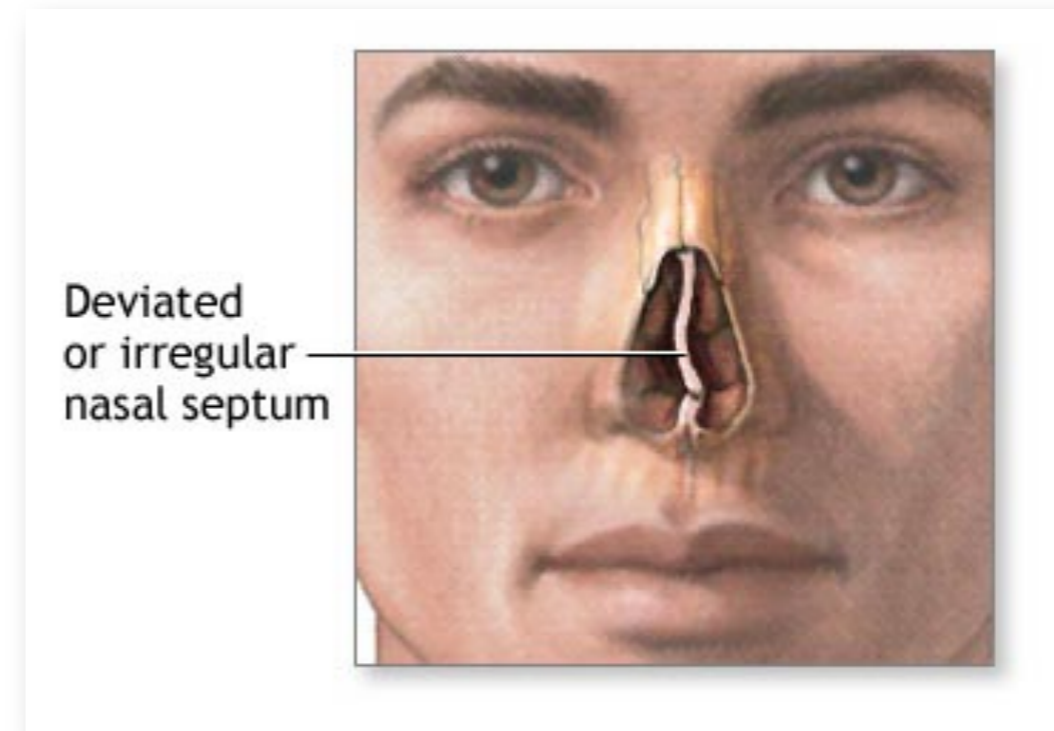
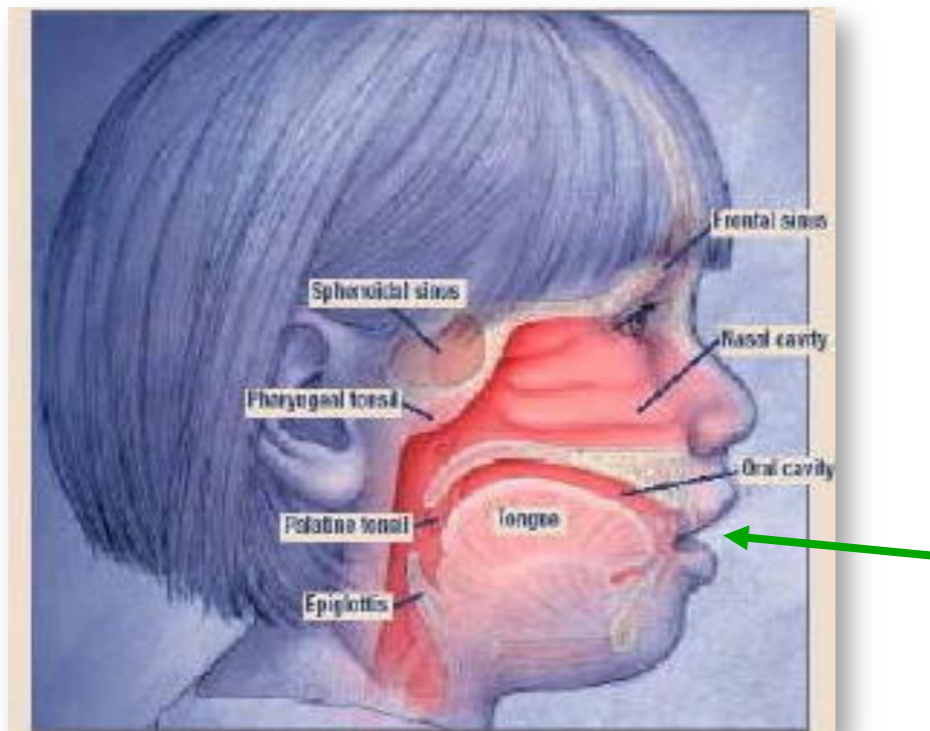
長期的張口呼吸容易造成舌頭乾裂(左圖)、咽喉黏膜損傷，黏膜變薄、咽喉表面凹凸不平(藍色箭頭)、血管增生、擴張(紅色箭頭)，患者常有慢性而且激烈的咳嗽，也因此容易引起血管破裂，出現咳血的現象。

# 慢性鼻竇炎



因鼻塞所形成的黑眼圈，主要分佈於雙眼的內側1/2處(紅色箭頭)，由於患者易因此改為張口呼吸，因此嘴唇常呈乾裂(藍色箭頭)，口腔乾燥。

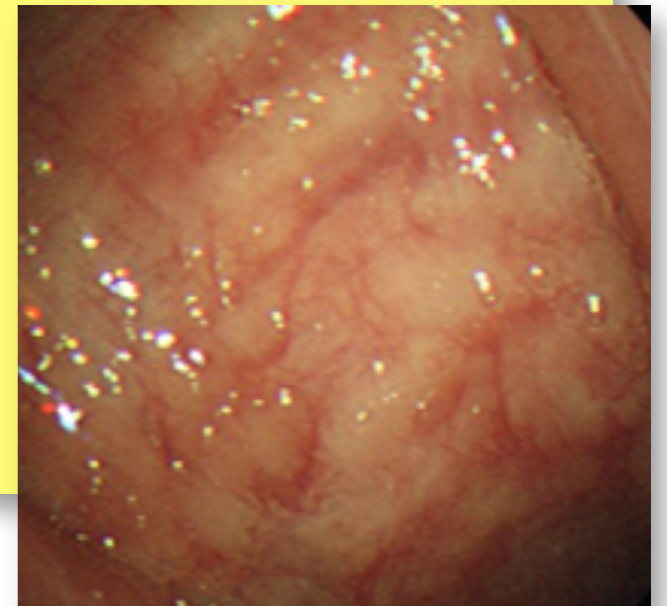
# Nasal Blockade : 鼻塞



鼻塞的病患容易改成張口呼吸，導致口腔、咽喉乾燥，黏膜損傷，咳嗽受體及感覺神經變的異常敏感，一旦說話或一點點鼻涕倒流，便容易引起咳嗽。

# 過敏性鼻炎的臨床表徵

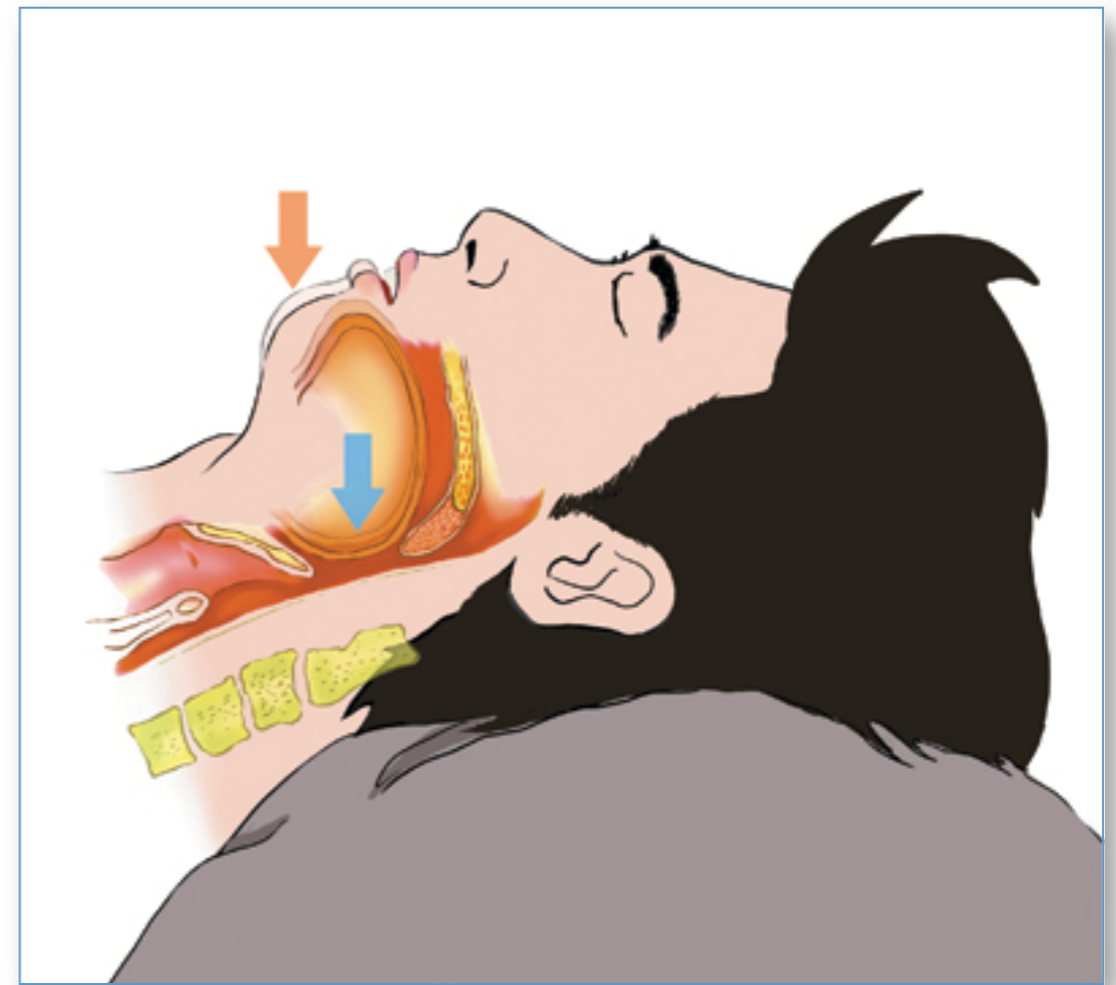
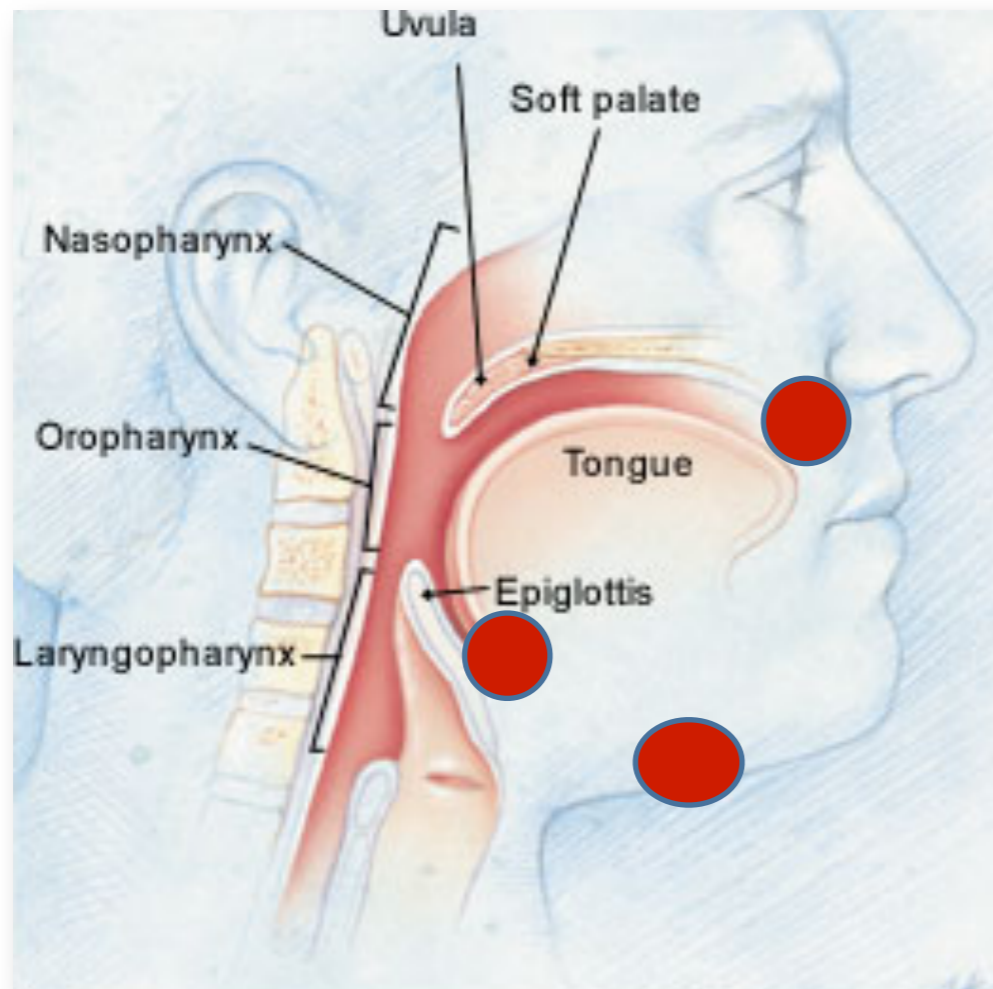
- 約有**1/4**的病患 症狀只出現在夜間睡覺時
  - 夜間睡眠易中斷 總覺得**睡眠不足**
  - 睡覺時或起床後容易**口乾舌燥**
  - 早上起床總**有痰**液卡在喉嚨裡
  - 睡覺時或起床後**氣喘常發作** 或覺得較喘有時起床後會出現**咳血**





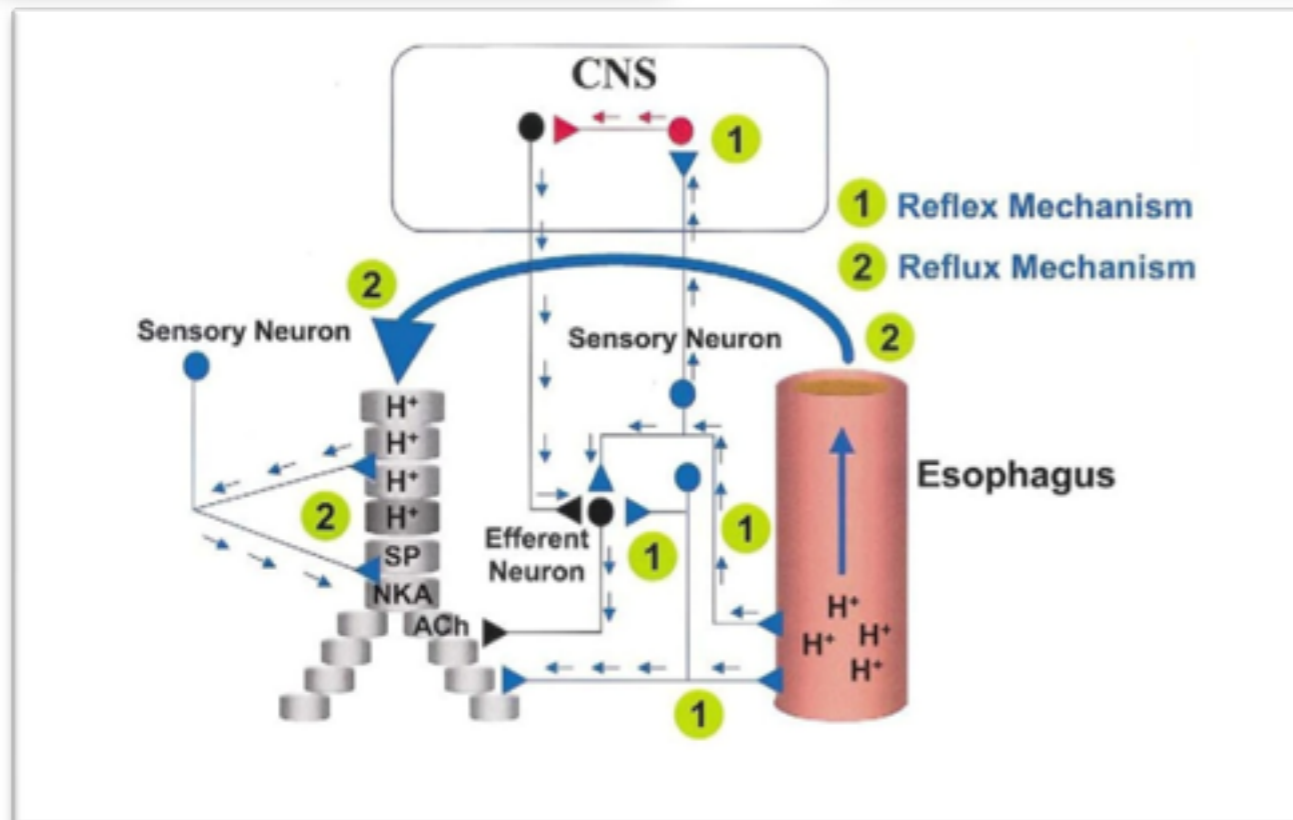
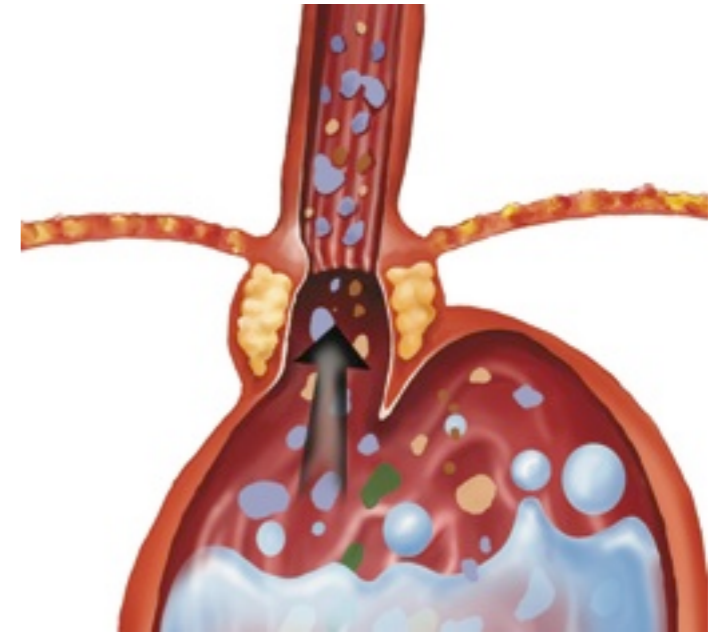
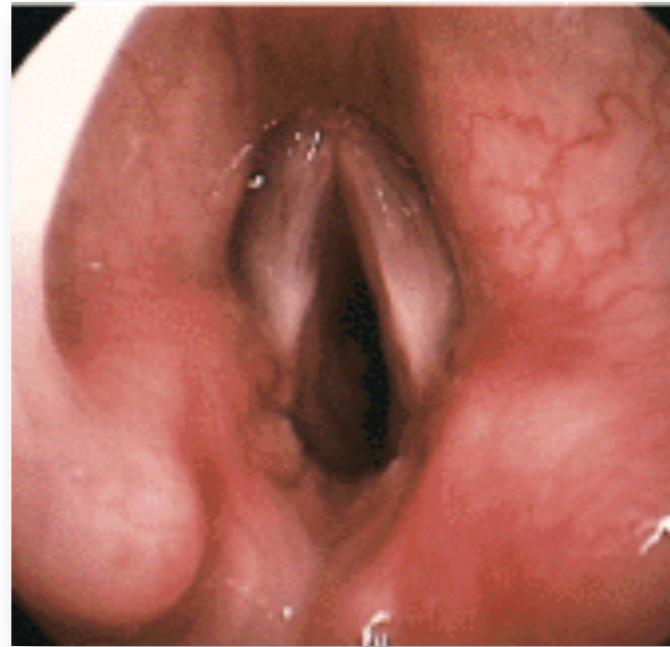
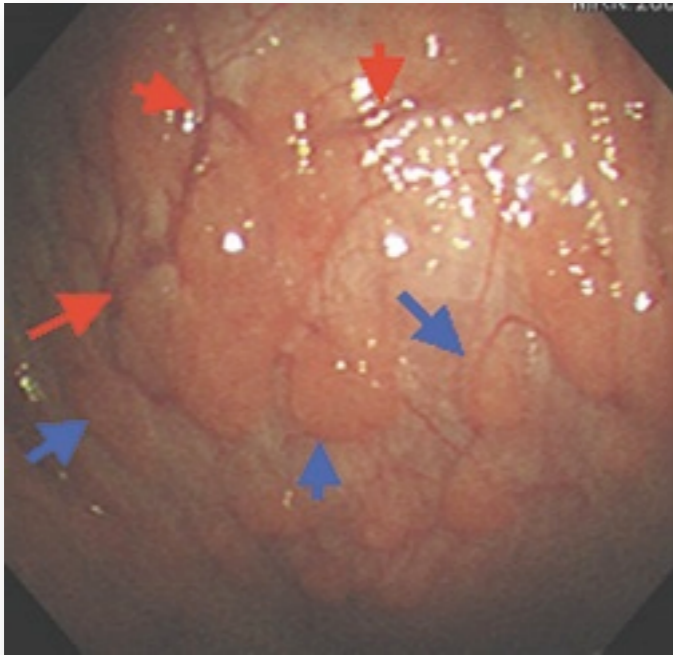
# Upper Airway Resistance Syndrome

## 上呼吸道狹窄症候群



下顎內縮或下顎狹小的人，直立時這些結構上的異常，不會影響到上呼吸道的通暢(左圖)。但一旦躺下來睡著時，因為肌肉放鬆，舌頭無法有效支撐，便往後倒，因而阻擋了上呼吸道的正常呼吸，增加呼吸的阻力(右圖)。

# GERD : 胃食道逆流



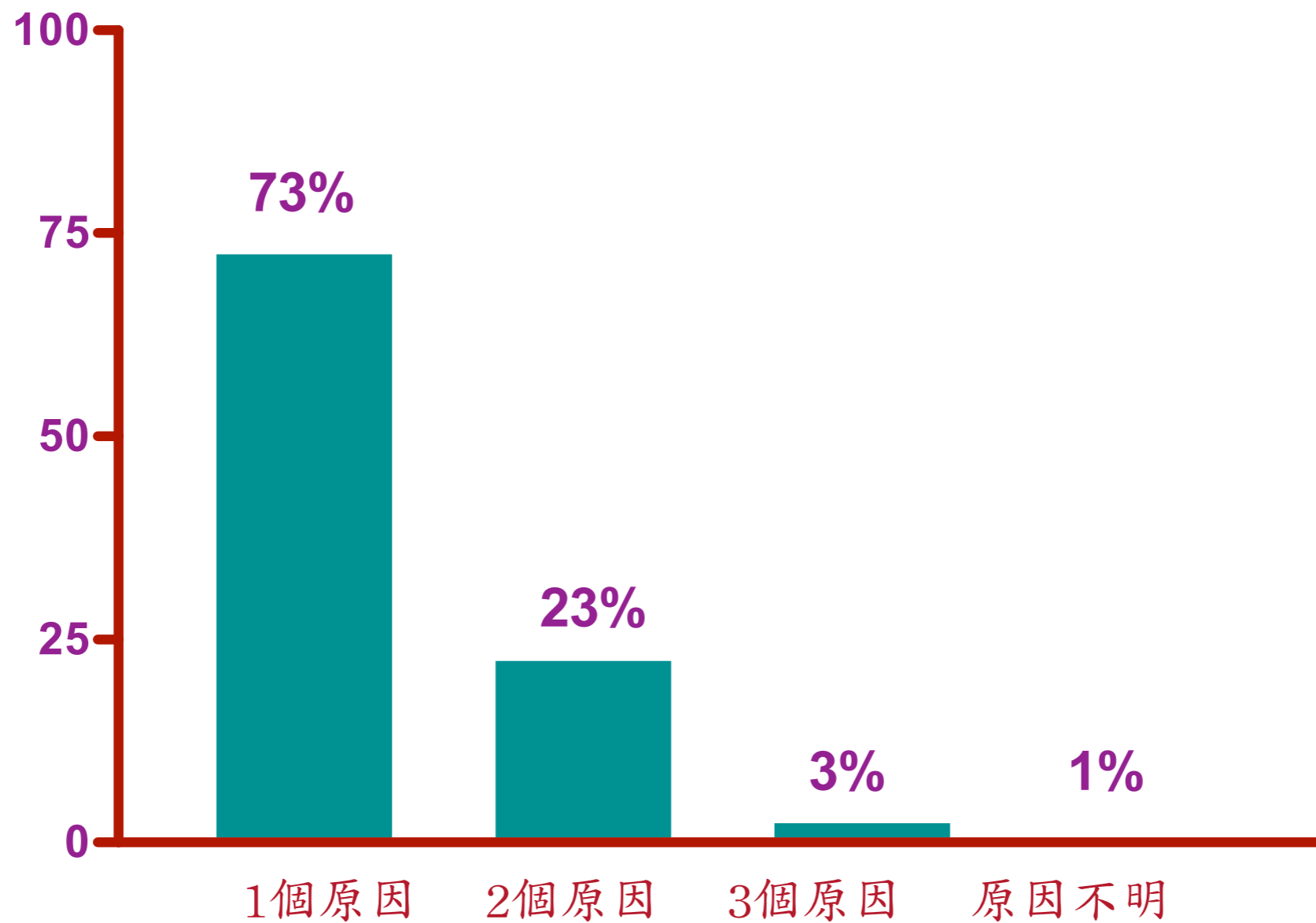
H<sup>+</sup> induced sensory neuropeptides

Neurogenic inflammation

Cough receptor threshold



# 慢性咳嗽是許多原因造成

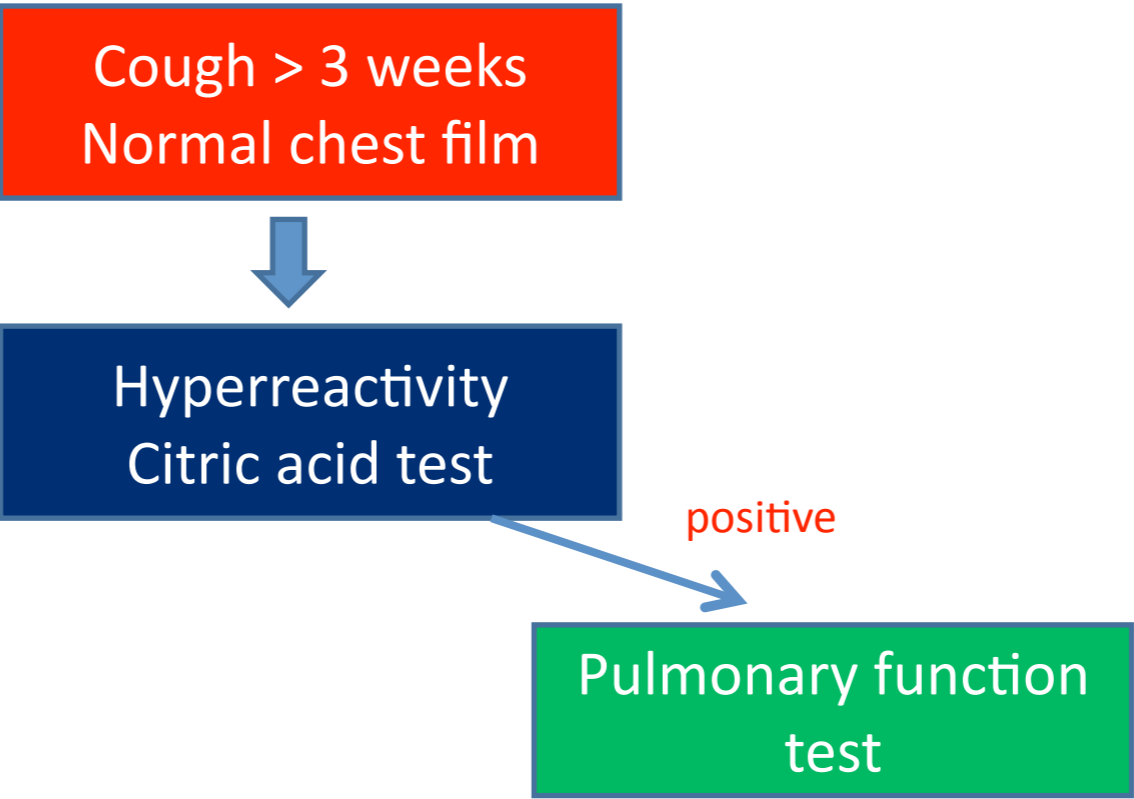


Cough > 3 weeks  
Normal chest film

Cough > 3 weeks  
Normal chest film



Hyperreactivity  
Citric acid test



Cough > 3 weeks  
Normal chest film



Hyperreactivity  
Citric acid test

positive

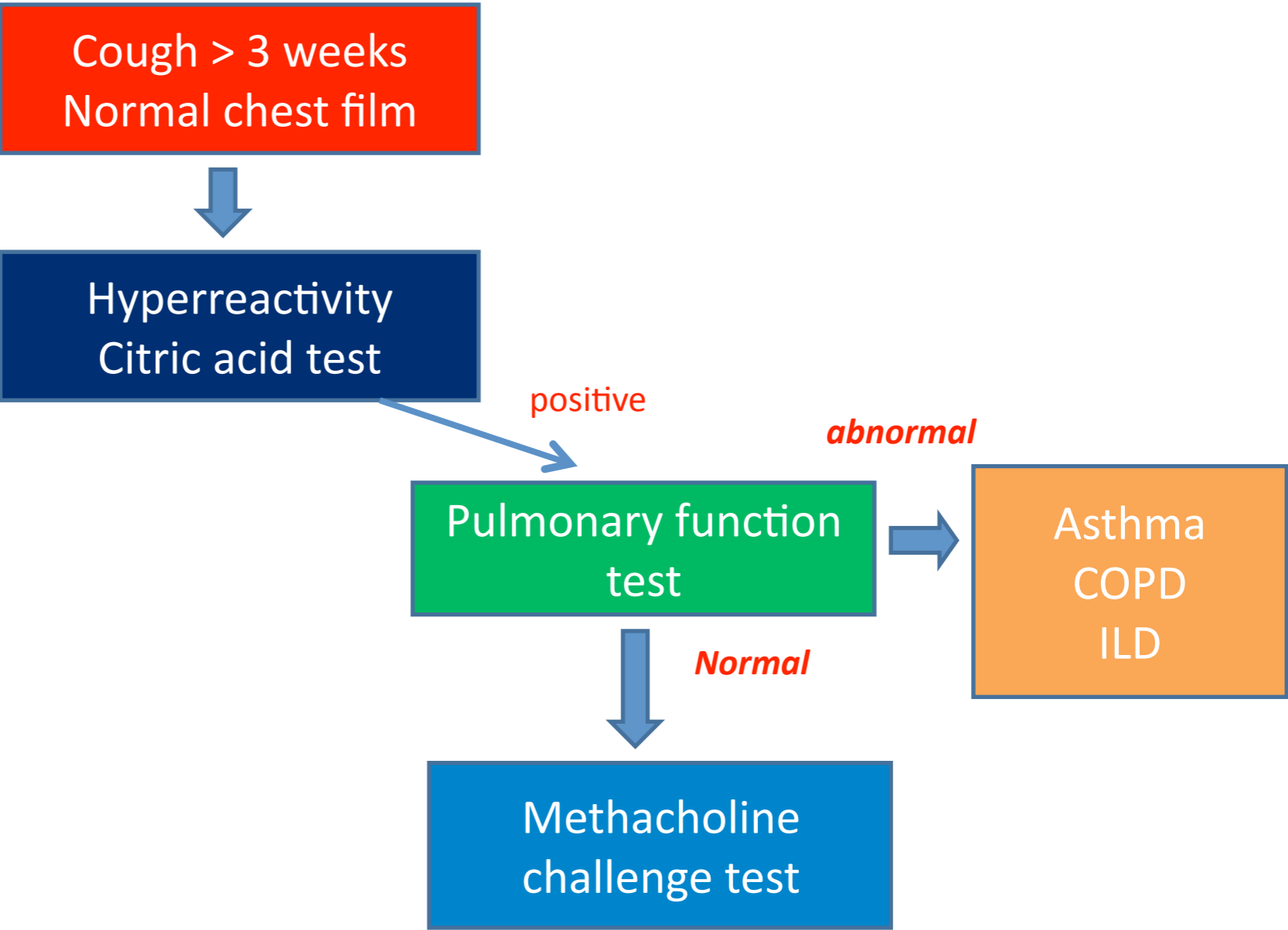


Pulmonary function  
test

*abnormal*



Asthma  
COPD  
ILD



Cough > 3 weeks  
Normal chest film



Hyperreactivity  
Citric acid test

positive



Pulmonary function  
test

abnormal



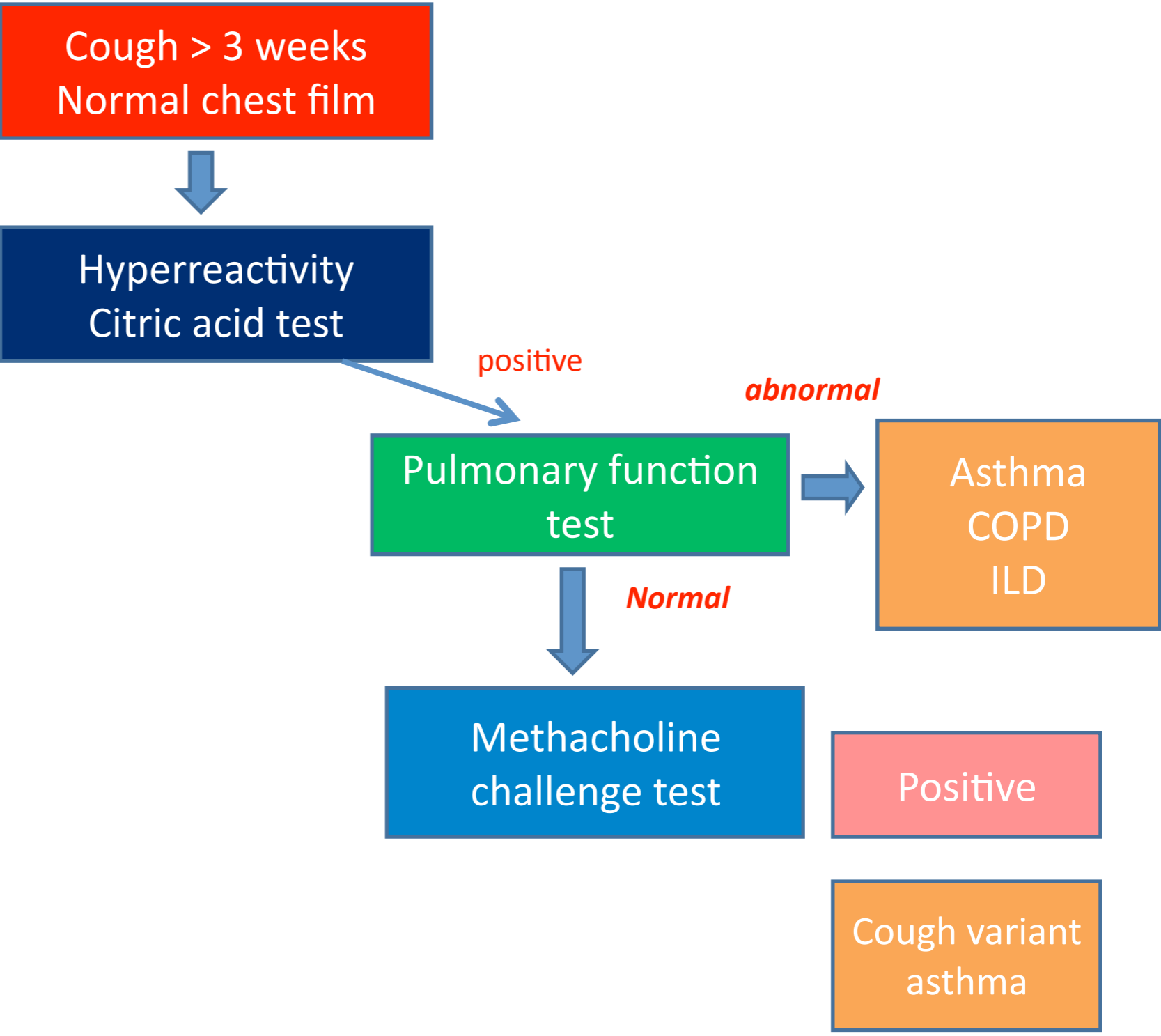
Asthma  
COPD  
ILD

Normal



Methacholine  
challenge test





Cough > 3 weeks  
Normal chest film



Hyperreactivity  
Citric acid test

positive



Pulmonary function  
test

abnormal



Asthma  
COPD  
ILD

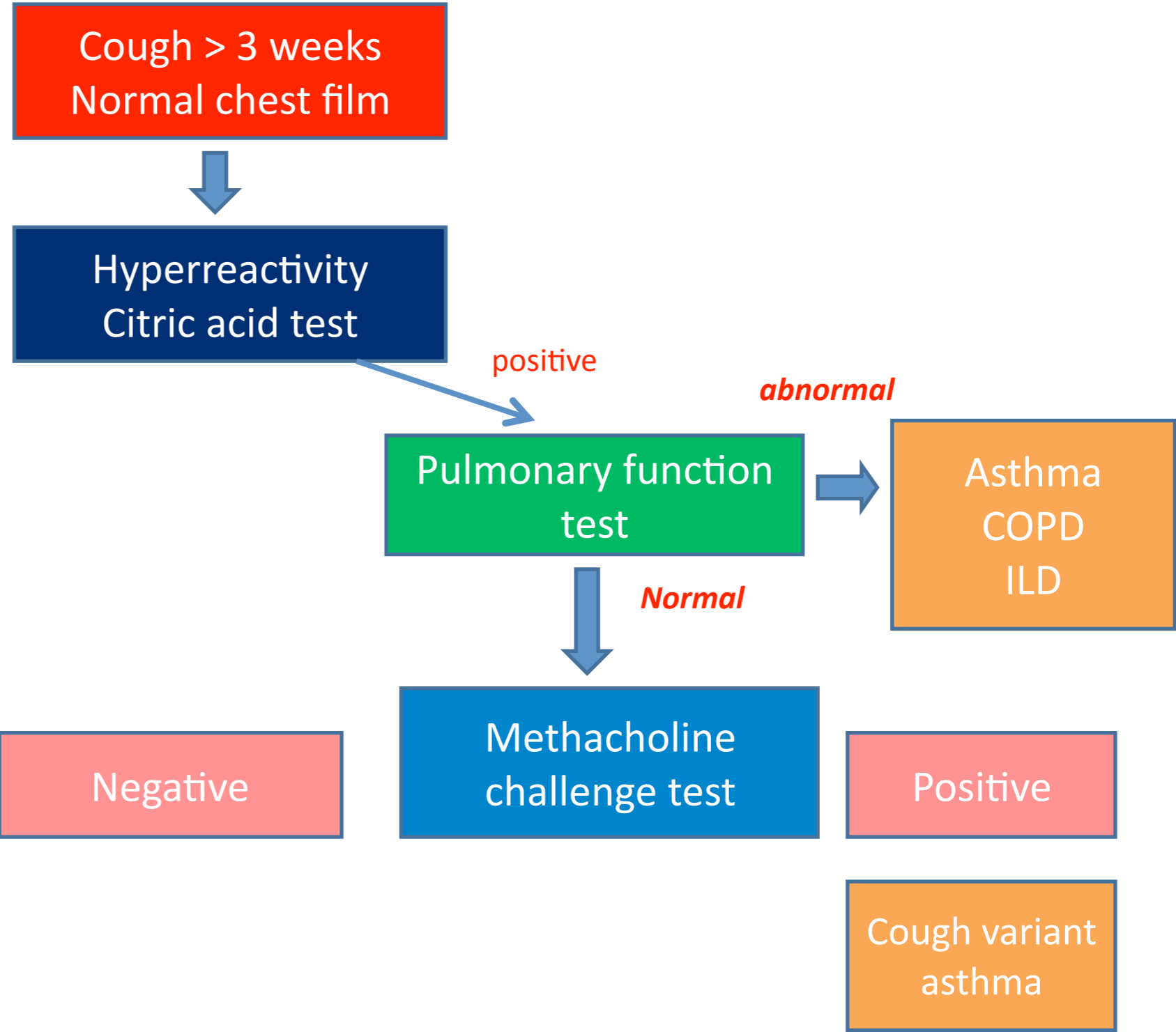
Normal

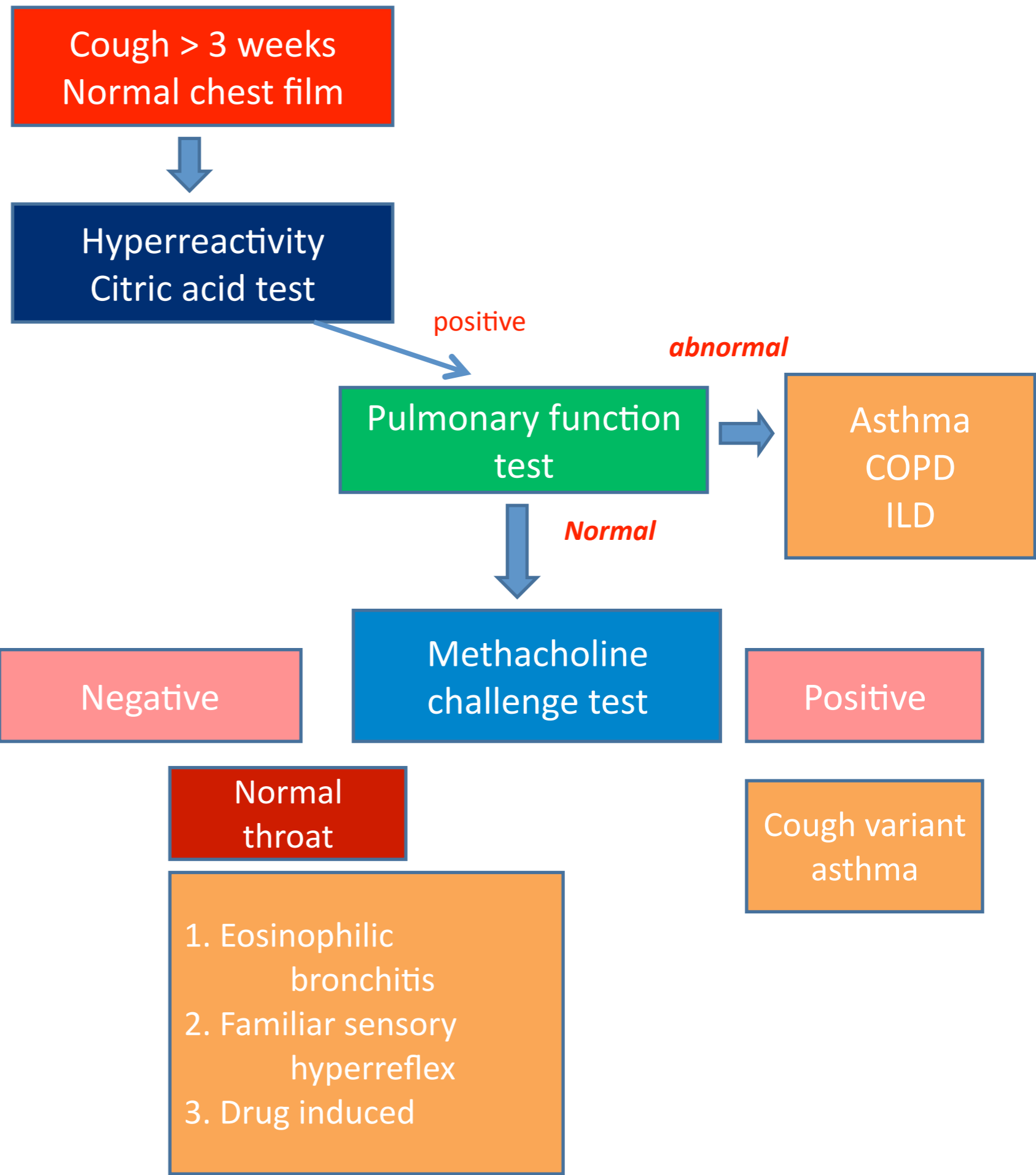


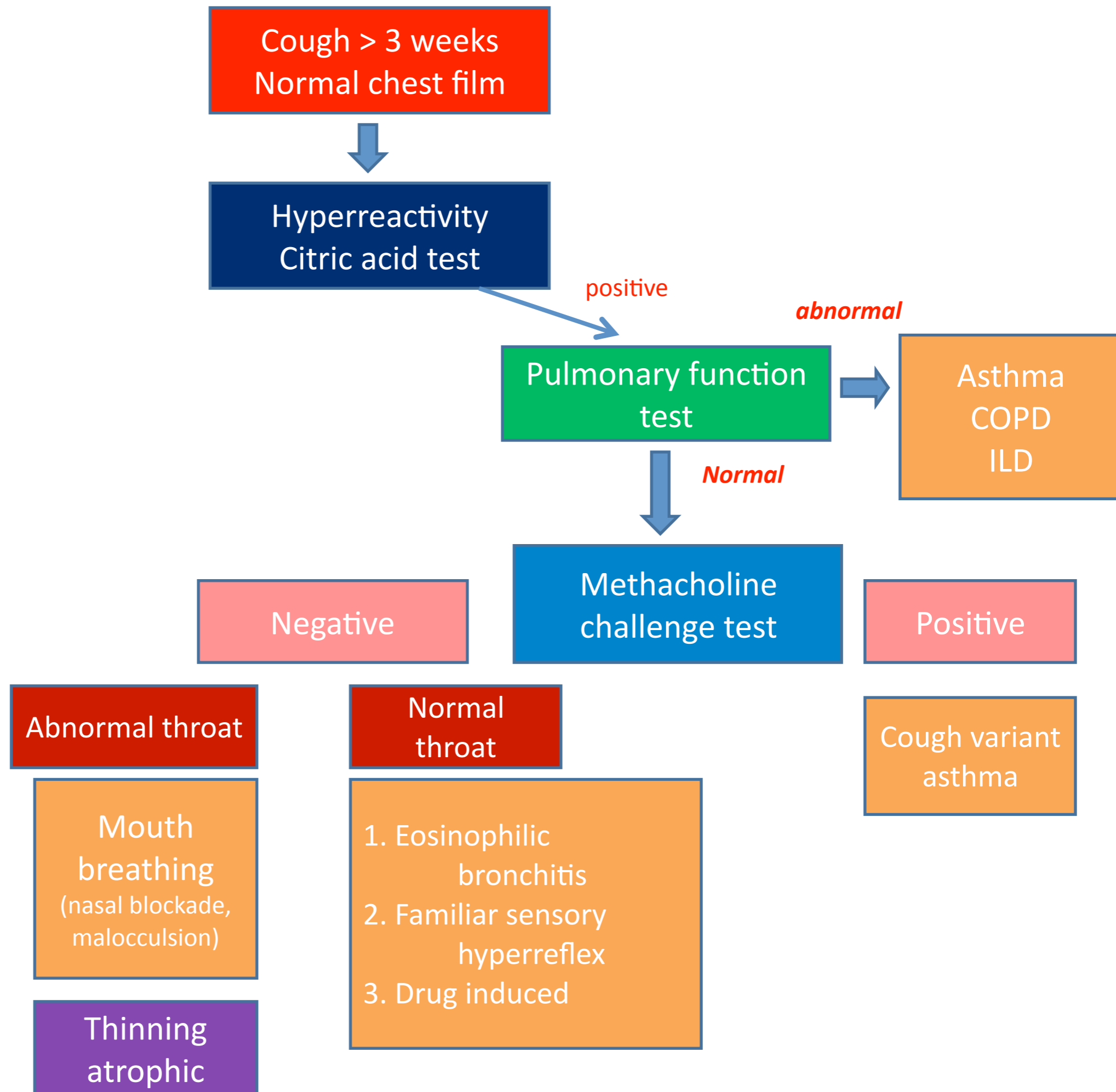
Methacholine  
challenge test

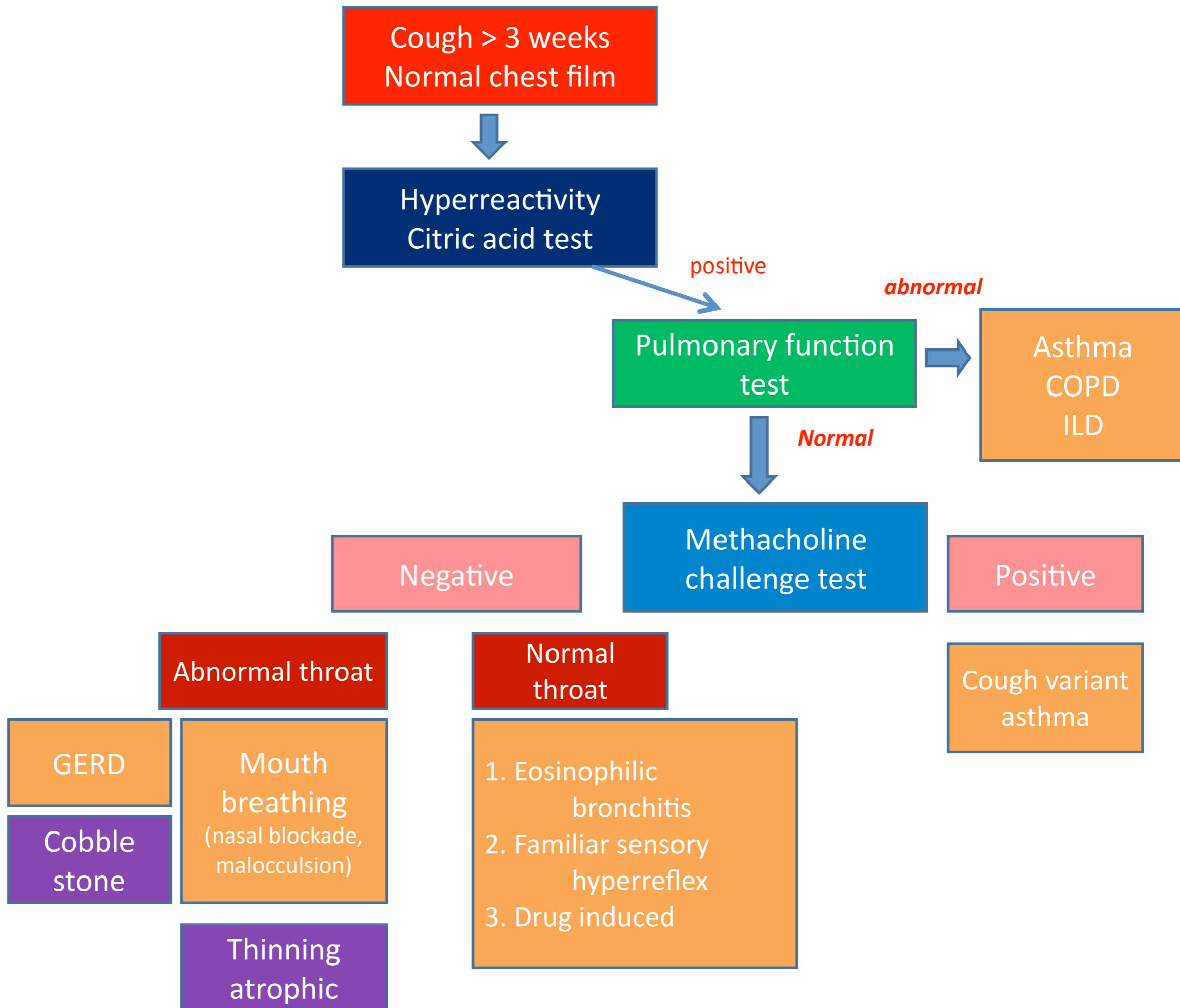
Positive

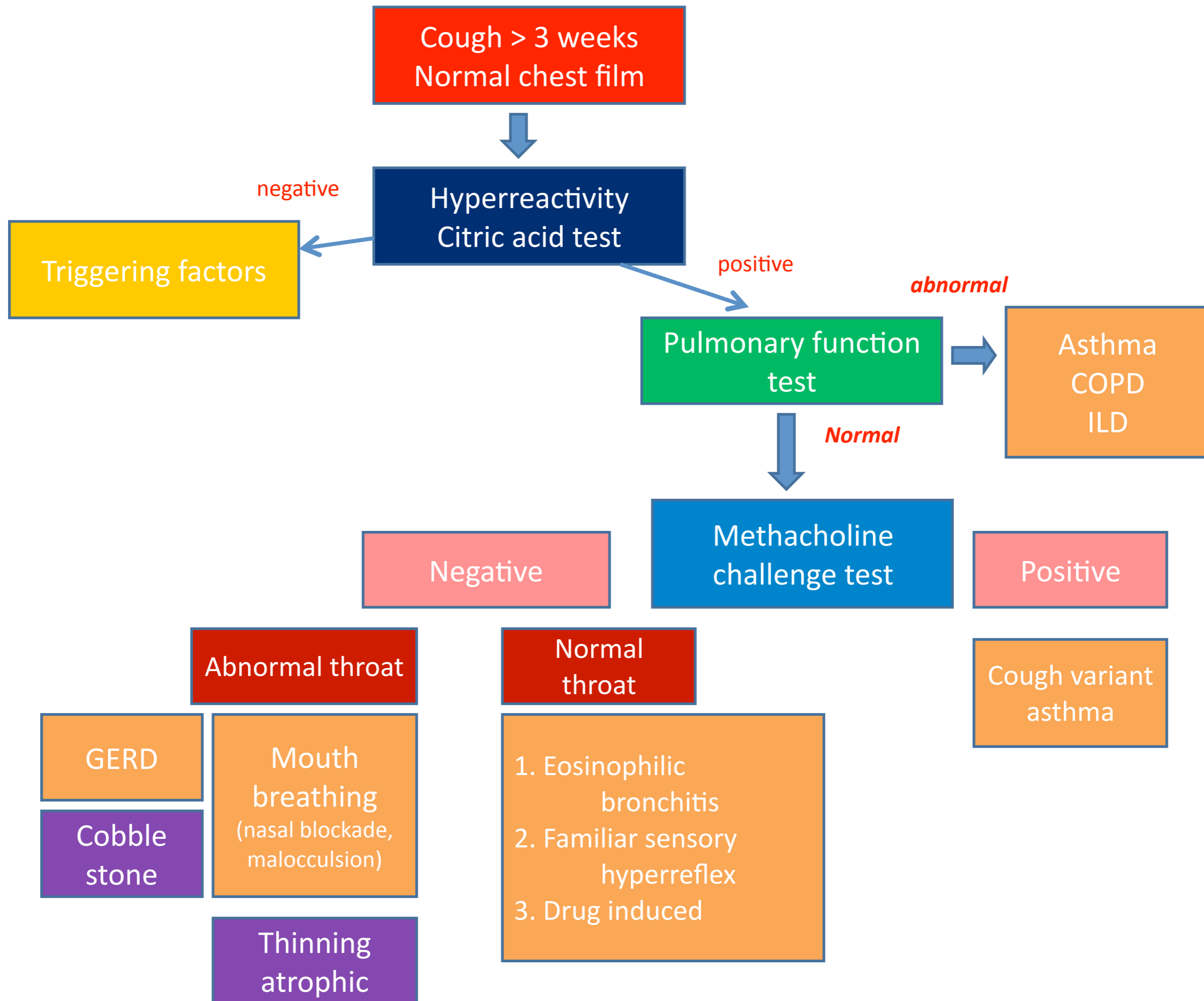
Cough variant  
asthma











Cough > 3 weeks  
Normal chest film

Hyperreactivity  
Citric acid test

Triggering factors

Pulmonary function  
test

Asthma  
COPD  
ILD

Methacholine  
challenge test

Negative

Positive

Abnormal throat

Normal throat

GERD

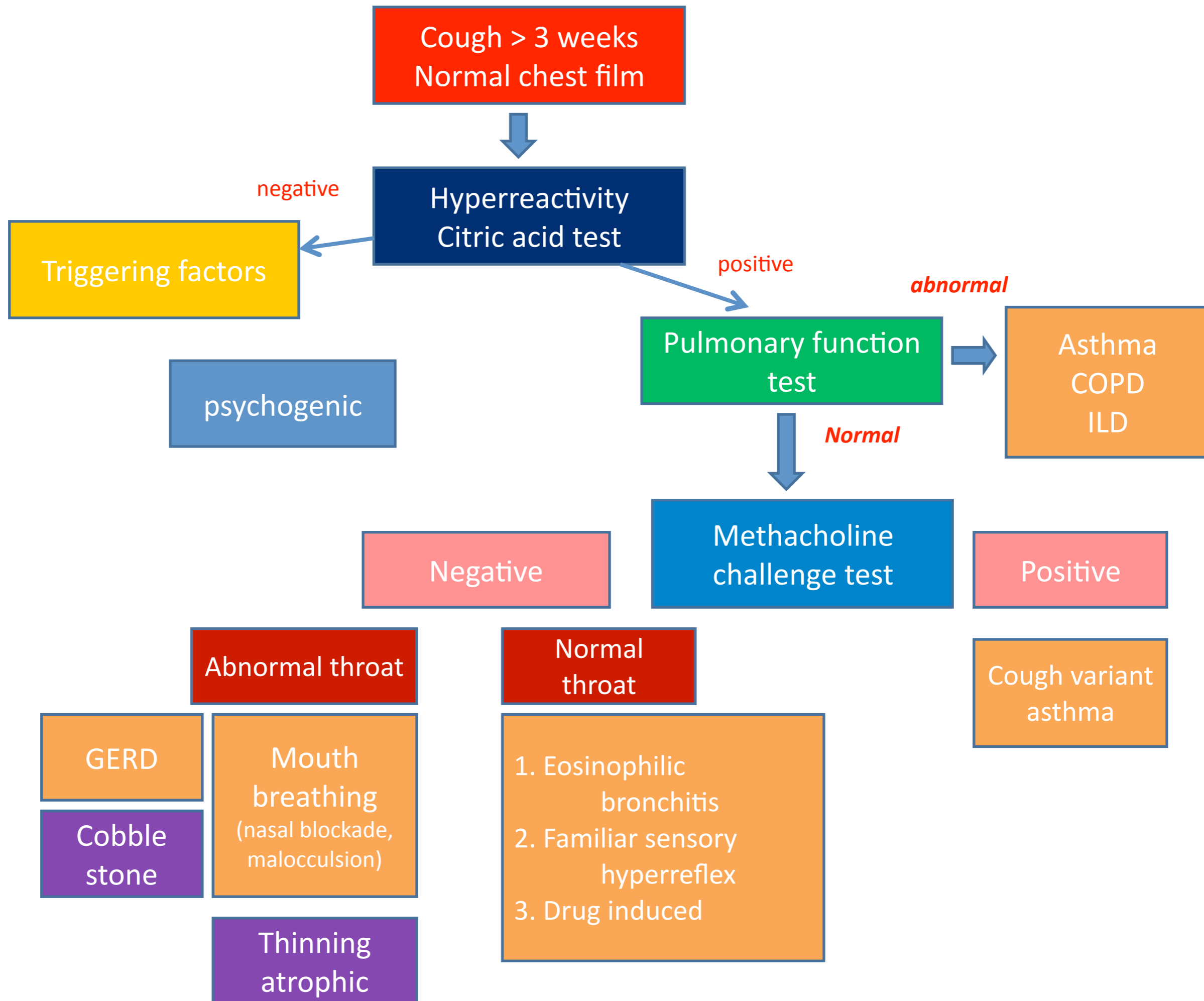
Cobble stone

Mouth breathing  
(nasal blockade,  
malocclusion)

Thinning atrophic

Cough variant  
asthma

1. Eosinophilic  
bronchitis  
2. Familiar sensory  
hyperreflex  
3. Drug induced



Cough > 3 weeks  
Normal chest film

Hyperreactivity  
Citric acid test

Triggering factors

psychogenic

Pulmonary function  
test

Asthma  
COPD  
ILD

Negative

Methacholine  
challenge test

Positive

Abnormal throat

Normal throat

GERD

Cobble  
stone

Mouth  
breathing  
(nasal blockade,  
malocclusion)

Thinning  
atrophic

Cough variant  
asthma

1. Eosinophilic  
bronchitis  
2. Familiar sensory  
hyperreflex  
3. Drug induced

Cough > 3 weeks  
Normal chest film



Hyperreactivity  
Citric acid test

negative

Triggering factors

positive

Pulmonary function  
test

abnormal

Asthma  
COPD  
ILD

Normal

Methacholine  
challenge test

Negative

Positive

- 1. Postnasal drip
- 2. Endobronchial (foreign body, tumor)
- 3. Environmental
- 4. Occupational

psychogenic

Abnormal throat

GERD

Cobble stone

Mouth breathing (nasal blockade, malocclusion)

Thinning atrophic

Normal throat

- 1. Eosinophilic bronchitis
- 2. Familiar sensory hyperreflex
- 3. Drug induced

Cough variant asthma



# Treatment

- GERD:

Proton pump inhibitor (Nexium BID)  
Diet control

- Post-nasal drip:

1<sup>st</sup> generation anti-histamine  
topical anti-cholinergic (atrovent)

- Mouth breathing:

- Nasal blockade: pseudo-ephedrine
- Mal-occlusion
- Sleep apnea/ upper airway resistance syndrome

Robitussin, 喉糖, 蜂蜜  
各種“秘方”等

- Atrophic pharynx:

Erispan, brown mixture

- Familial sensory hyperreflex:

Gabapentin