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DISCLOSURE

No conflict
of interest

No financial
disclosures

> 45 years
a physician

> 40 years
SLP



**The devil knows more for being old
than for being the devil**

SLP intervention is the treatment
of choice for Chronic Cough

(New England Journal of Medicine, 2025)



The NEW ENGLAND
JOURNAL of MEDICINE

Chronic Cough

NEJM: World's leading medical journal and website.

Journal Impact Factor of 78.5

IF = Average frequency with which articles published in that journal over the previous two years were cited

SLP and Audiology Journals IF: 2.5 – 3.0



Chronic Cough



alamy

Image ID: 2CACEX
www.alamy.com

Objectives:

What is chronic cough?

Unexplained refractory chronic cough

The role of vagal signaling

Cough hypersensitivity

Multimodal SLP intervention

Pharmacologic neuromodulation

Behavioral component (Anxiety and Depression)

Neural signaling inhibitors

Chronic cough

Cough is one of the 13 functions of Larynx

Cough is a reflex



Chronic cough

Acute cough < 3 weeks

Chronic cough > 8 weeks (Post infections cough should not last longer)



Chronic cough

Chronic cough: 3 different circumstances

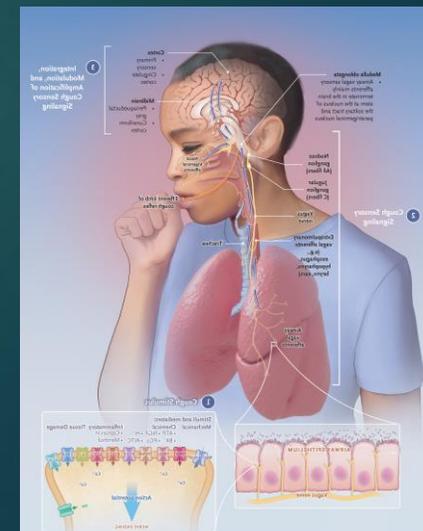
**Unexplained chronic cough:
Complete Dx work up fails to identify
cause**



Chronic cough

Refractory chronic cough: Persists despite Dx identified and treatment fails

Unexplained refractory chronic cough: No Dx. No response to empirical treatment



Chronic cough

1. GERD – LPR

Silent GERD frequently associated to LPR

2. Asthma

3. PND



Chronic cough

Some reports: 60% of adults w
unrefractory or unexplained cough

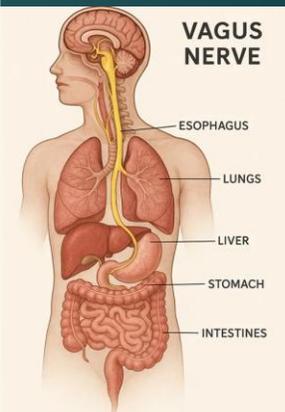
Real Prevalence in adults = 10 %
(Children ?)



Chronic cough

Unexplained or refractory CC =
Neuropathic changes in X signals

Hyperreactive cough

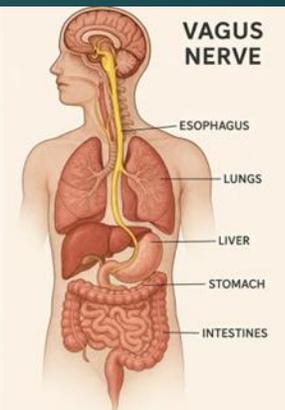


Chronic Cough

Human cough reflex = Mediated by X

X = Lungs sensory innervation

X = Larynx sensory innervation (Int. branch of SLN)

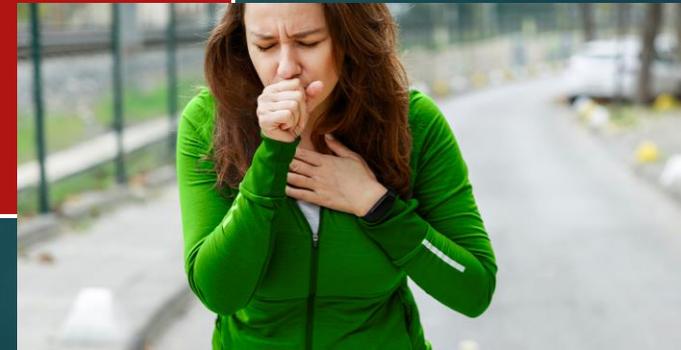


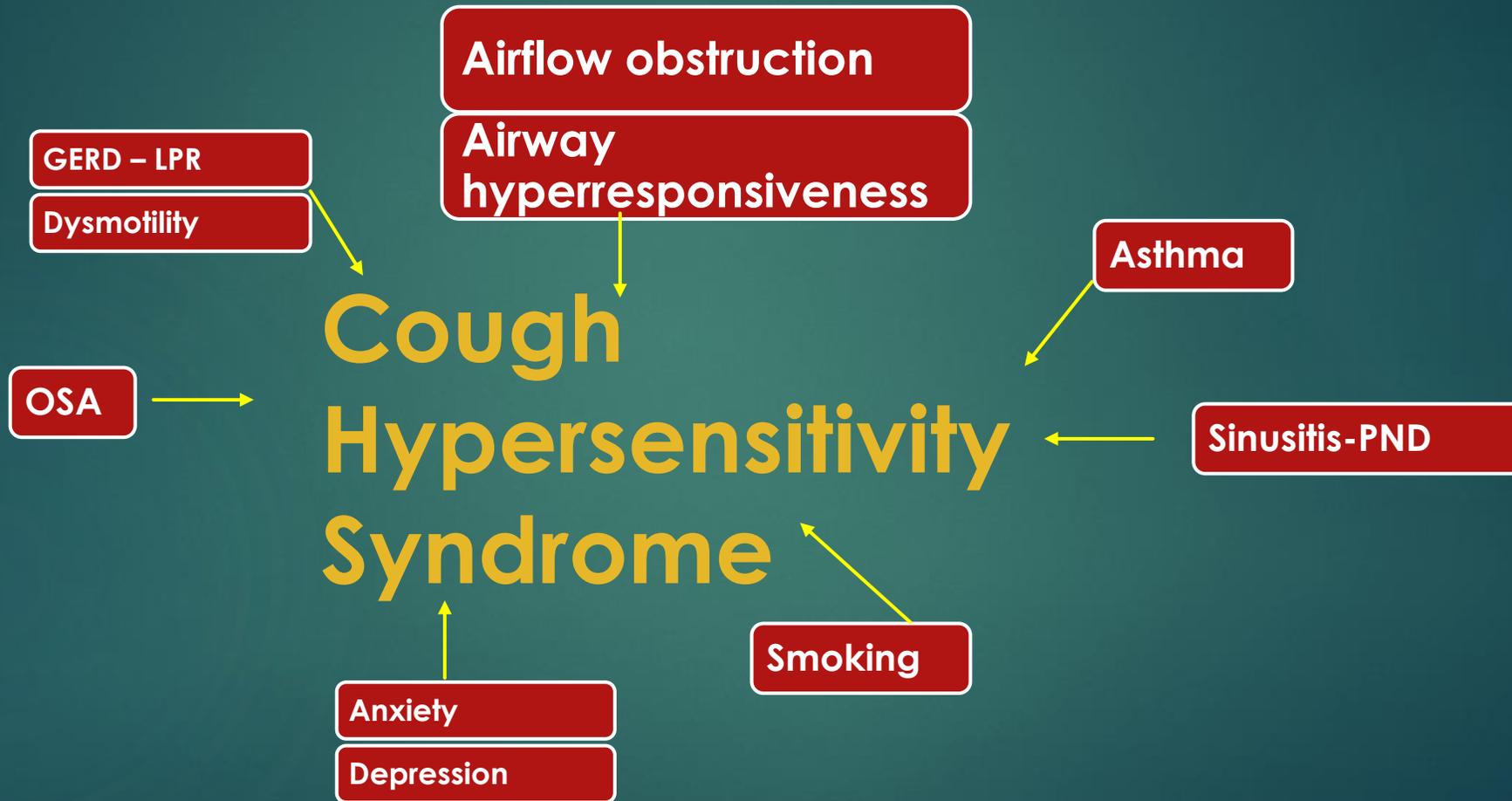
Chronic cough

Fits of coughing provoked by low levels of triggers

Fits preceded by sensations in pharynx, larynx (tickle, itch)

Uncontrollable urge to cough



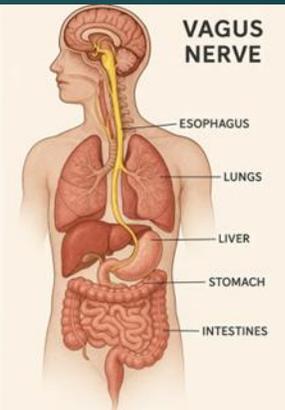


Chronic cough

Cough hypesensitivity syndrome

Sensory vagal neuropathic cough

Overactive cough



Chronic cough

Cough stimulus : Mechanical – Chemical
– Inflammatory



Cough sensory signaling



Integration cough sensory signaling

Chronic cough

Stimulus (Mech., Ch., Inf.): On X cranial nerve



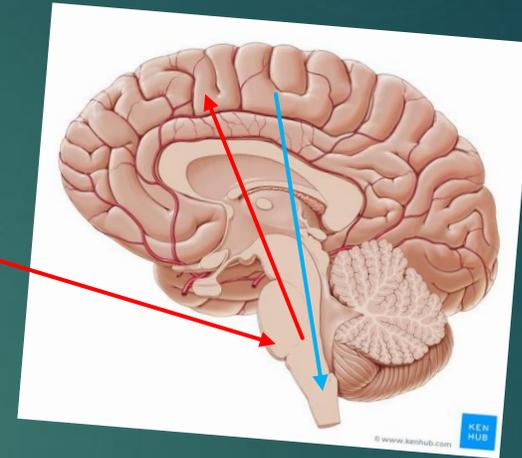
Cough signaling : Lungs – trachea - larynx
- pharynx – ears **



Integration : Medulla Oblongata –
Midbrain - Cortex

Chronic cough

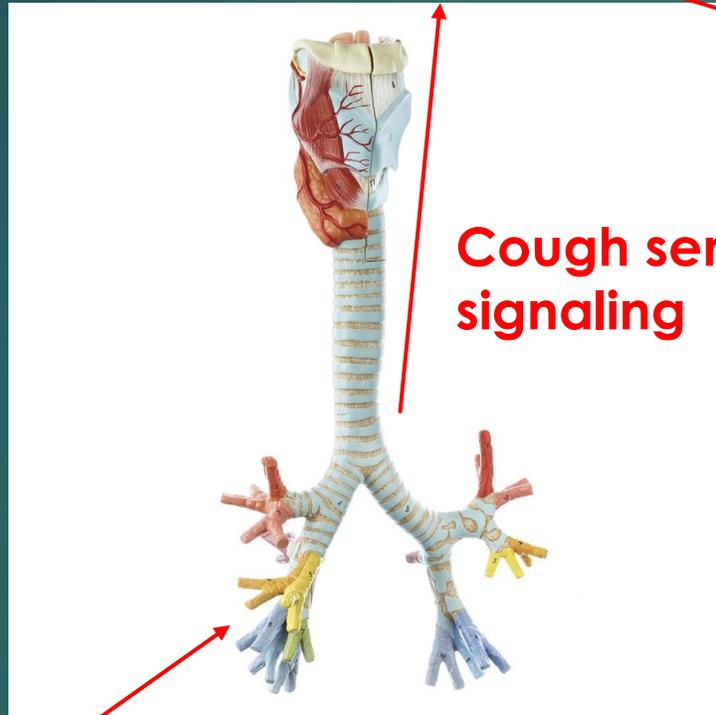
Cough sensory signaling relay



Efferent signal (blue)



Efferent limb cough reflex



Cough sensory signaling

Afferent signals (red)

stimulus



Airway epithelium -

Cronic cough

**** Arnold's reflex**

Ear – cough – reflex (stim. of ear canal)

Cough during otoscopy

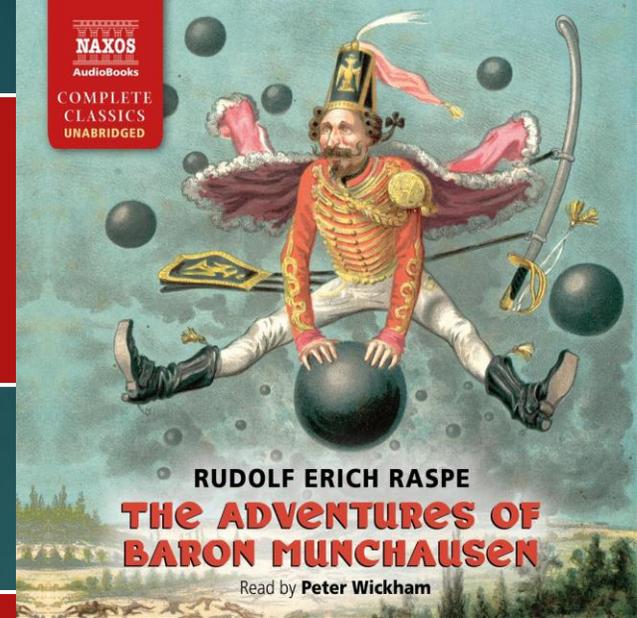
Auricular branch of X cranial nerve



Chronic cough

- ▶ Insert video of cough reflex here

Chronic cough



CC always has a behavioral component

But...

Somatic cough syndrome is a specific disorder

Included under somatic symptom disorder (SSD - DSM 5)

Chronic cough

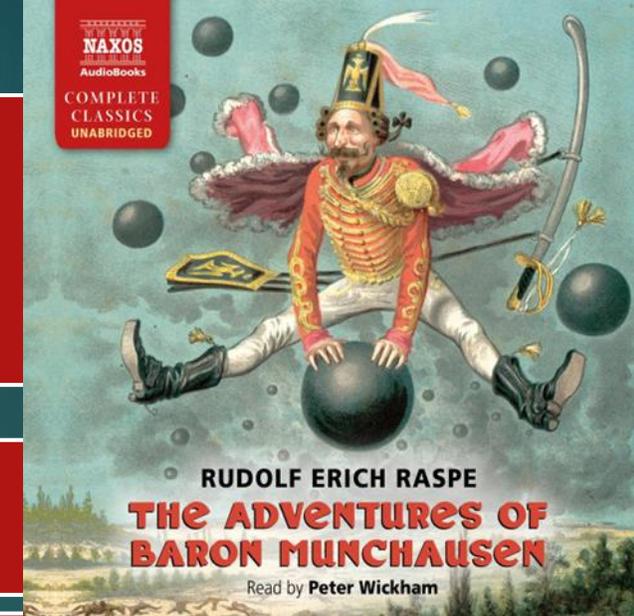
Somatic cough syndrome (SSD – DSM 5)

Can occur in adults and children

Previously psychogenic cough

Previously tic cough

Previously habit cough



Chronic cough

Absence of coughing during sleep

Or

Coughing with honking – barking sound

Not

Pathognomonic of Somatic Cough Syndrome



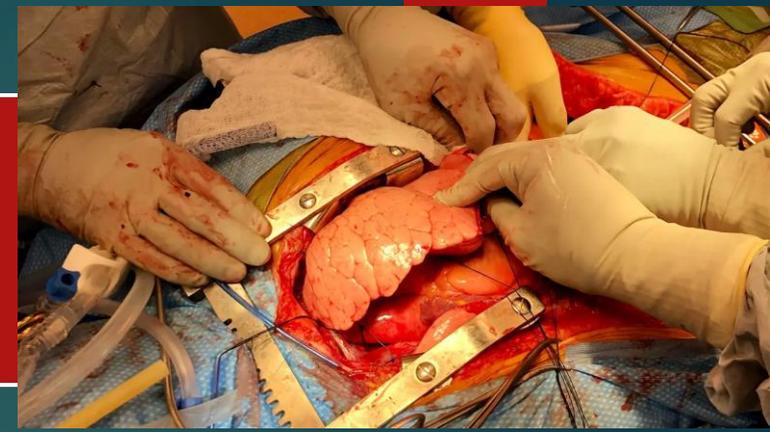
Chronic cough



Patients with chronic cough (not only SSD) are at risk of multiple psychological symptoms

Depression and Anxiety (secondary to unresolved cough)

Chronic cough



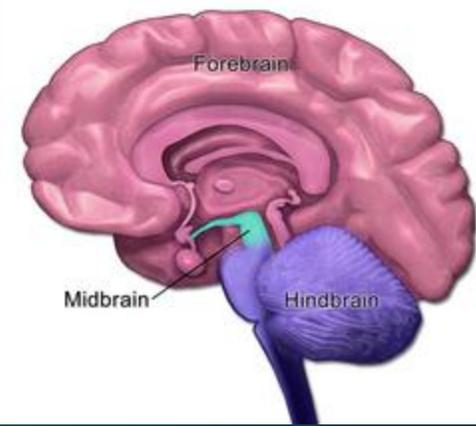
Importance of X cranial nerve demonstrated by:

Surgical injury to Vagus during lung transplant causes loss of cough reflex for 6 – 12 months

Palliative ipsilateral vagotomy for unresectable lung CA alleviates cough

Chronic cough

Cough Hypersensitivity changes lie not in vagal afferents but in midbrain abnormally amplifying low-level signals from brainstem



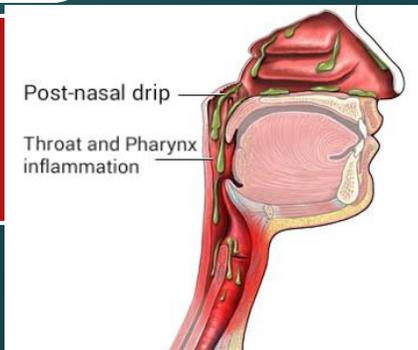
Chronic cough

PND can be silent (not sensing PND or not recognize throat clearing)

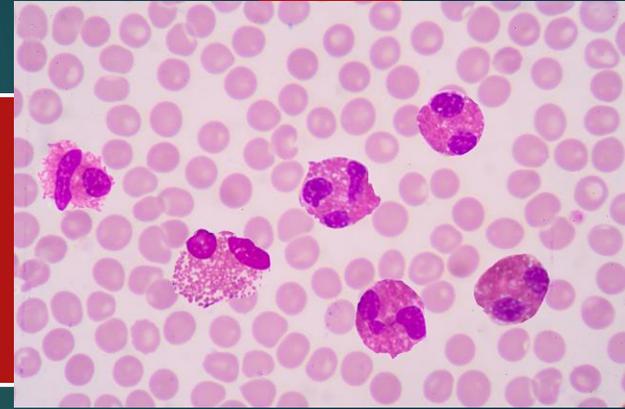
PND is not Gold standard DX for sinusitis = CT scan

Flexible scope can be useful

Consider aspirin exacerbated rhinosinusitis



Chronic cough



Cough may be the sole presenting symptom of Asthma

Non – asthmatic eosinophilic bronchitis (no sputum eosinophilia)

Chronic cough

GERD – LPR can manifest as cough – phlegm syndrome mimicking chronic bronchitis

Pharmacological treatment can take up to 3 months to show results

Acid suppression alone does not improve cough (may improve heartburn though)

Cough can be secondary to non-acid GERD



Chronic cough

GERD – LPR cannot be Dx by laryngoscopy alone because chronic cough laryngeal changes mimic those secondary to GERD – LPR

Antiacid diet and weight loss should be considered (improve function of lower esophageal sphincter and decrease intraabdominal pressure)



Chronic cough

Intensive exercise increasing intraabdominal pressure should be avoided

GI prokinetic therapy should be considered (Metoclopramide, Domperidone, Z-pak)



Chronic cough

EILO or ILO is a
different
disorder than
CC

Laryngospasm
is different than
EILO or ILO

Chronic Cough

EILO -
ILO



Chronic cough



Thalidomide may reduce cough severity in patients with Cystic Fibrosis



Thalidomide was satanized in the past

Chronic Cough

Thalidomide is the drug of choice for Erythema Nodosum Leprosum

Type 2 Lepra reaction



Chronic cough

Cough suppressants may be useful for a short period of time (Cough reflex inhibitors at Cortical level)

Tessalon, Tramadol are the most effective

TRAMADOL 30
50 mg CAPSULES

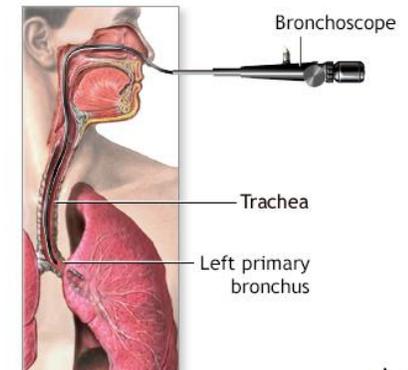
Oral use
Each capsule contains tramadol hydrochloride 50 mg

Oral use

Chronic cough

Chest X Ray, Chest CT scan,
Sinus CT scan may be necessary

Bronchoscopy may be
necessary



Chronic cough



**SLP
treatment**

**Improve
vocal
hygiene**

**Diaphrag
matic
breathing
pattern**

**Effortful
nasal
breathing
during
coughing
fits**



Chronic cough

How SLP works?

- Cortical activations modulating subcortical and brain-stem activities in response to cough stimuli may explain the success
- But...
- True mechanism is still unknown



Chronic cough

 THE UNIVERSITY OF MELBOURNE

School of Biomedical Sciences

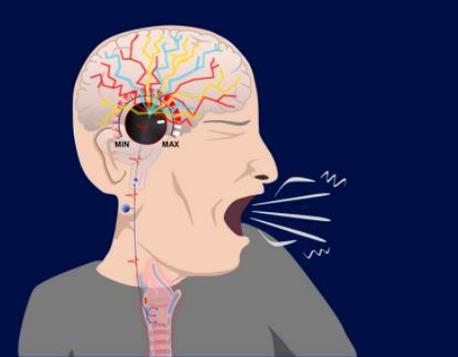
Gefapixant and brain activity in chronic cough

Clinical Study NOW OPEN

Mazzone Lab
Dept of Anatomy & Physiology

Do you have an unexplained chronic cough?

Do you want to help with research that could lead to better treatments for millions of people who suffer from chronic cough?

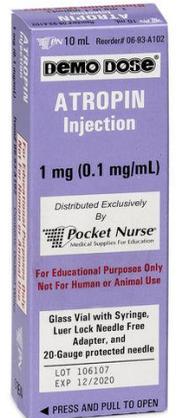


Truly unexplainable or refractory CC can be treated by vagal antagonists (side effects are an issue)

Antagonists of purinergic receptors are promising (gefapixant)

Chronic cough

Vagal antagonists:
Reduce parasympathetic
effects (Atropine like
substances)

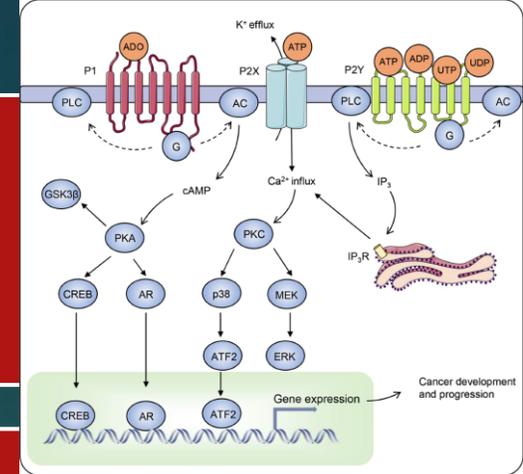


Chronic cough

Purinergic receptors : Plasma proteins mediating cellular signaling including inflammation, immune responses, and vascular reactivity)

Antagonistic purinergic receptors block these receptors

Not FDA approved (used in Switzerland, EU, and Japan)



Chronic cough

SLN block

Limited reports





Gracias !!



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Additional info

References

Comments - Questions

Gifts

Corewell Health William
Beaumont University
Hospital

