

# Practical Management of Chronic Cough

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College of Medicine

Otolaryngology - Head & Neck Surgery



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# Disclosures

- None
- Off-label use of medications



# Learning Objectives

- Participants will gain a deeper understanding of the Otolaryngology related factors that contribute to chronic cough as well as medical and procedural management options.
- Attendees will be able to apply structured treatment strategies for management of the rhinologic, gastroenterologic, and neurologic aspects of chronic cough that intersect into the sphere of otolaryngology.
- Surgeons will incorporate improved diagnostic algorithms and new treatment paradigms for chronic cough and expand their toolkit for treating these complex patients. They will also gain knowledge of upcoming pharmacologic advances that will affect the management of refractory chronic cough.
- Patients will benefit from more efficient disease characterization, and tailored interventions that lead to improved symptom control with fewer specialist visits and enhanced quality of life.



# Definitions

- **Acute cough:** maximum 3 weeks
- **Subacute cough:** 3-8 weeks
- **Chronic cough:** > 8 weeks
  - **Refractory chronic cough**
    - Associated/underlying medical conditions are identified, evaluate, and treated, but cough persists
  - **Unexplained chronic cough**
    - Associated/underlying medical conditions are not identified, despite testing and empiric therapy

Gibson P, et al. *Chest*. 2016; 149(1):27-44  
Smith JA, et al. *N Eng J Med*. 2016; 375(16):1544-1551.  
Morice A, et al. *Eur Respir Rev*. 2021; 30(162):210127.



# Chronic Cough: Impact

- Extremely common
  - 40% lifetime
  - 10% global prevalence
- Disruptive
  - \$\$\$
  - Quality of life
  - Productivity

Meltzer EO, et al. *J Allergy Clin Immunol Pract.* 2021;9(11):4037-4044.e2  
Weiner M, et al. *Chest.* 2021;159(6):2346-2355



# WORKUP OF CHRONIC COUGH



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# WHAT KIND OF DOCTOR?

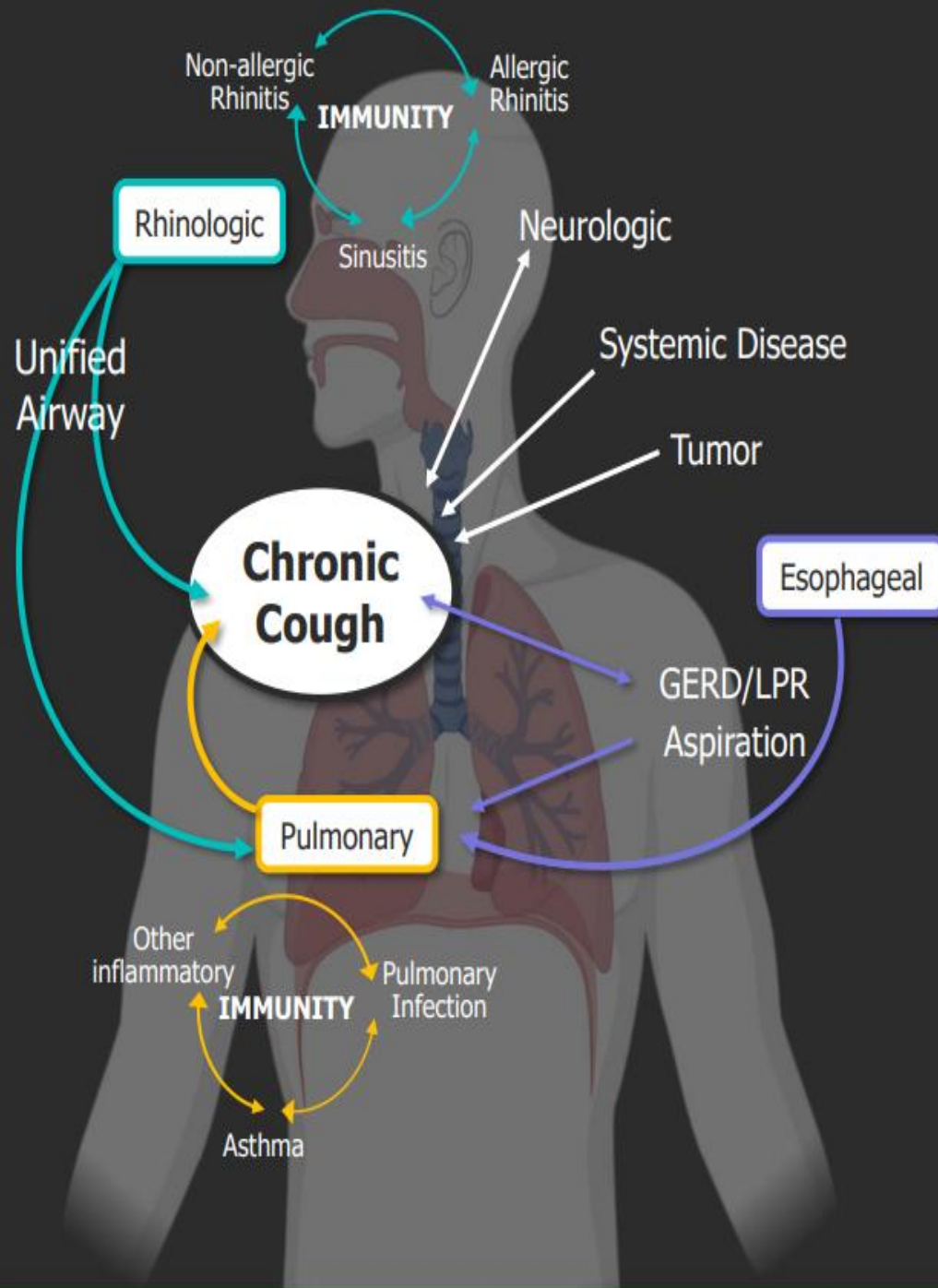


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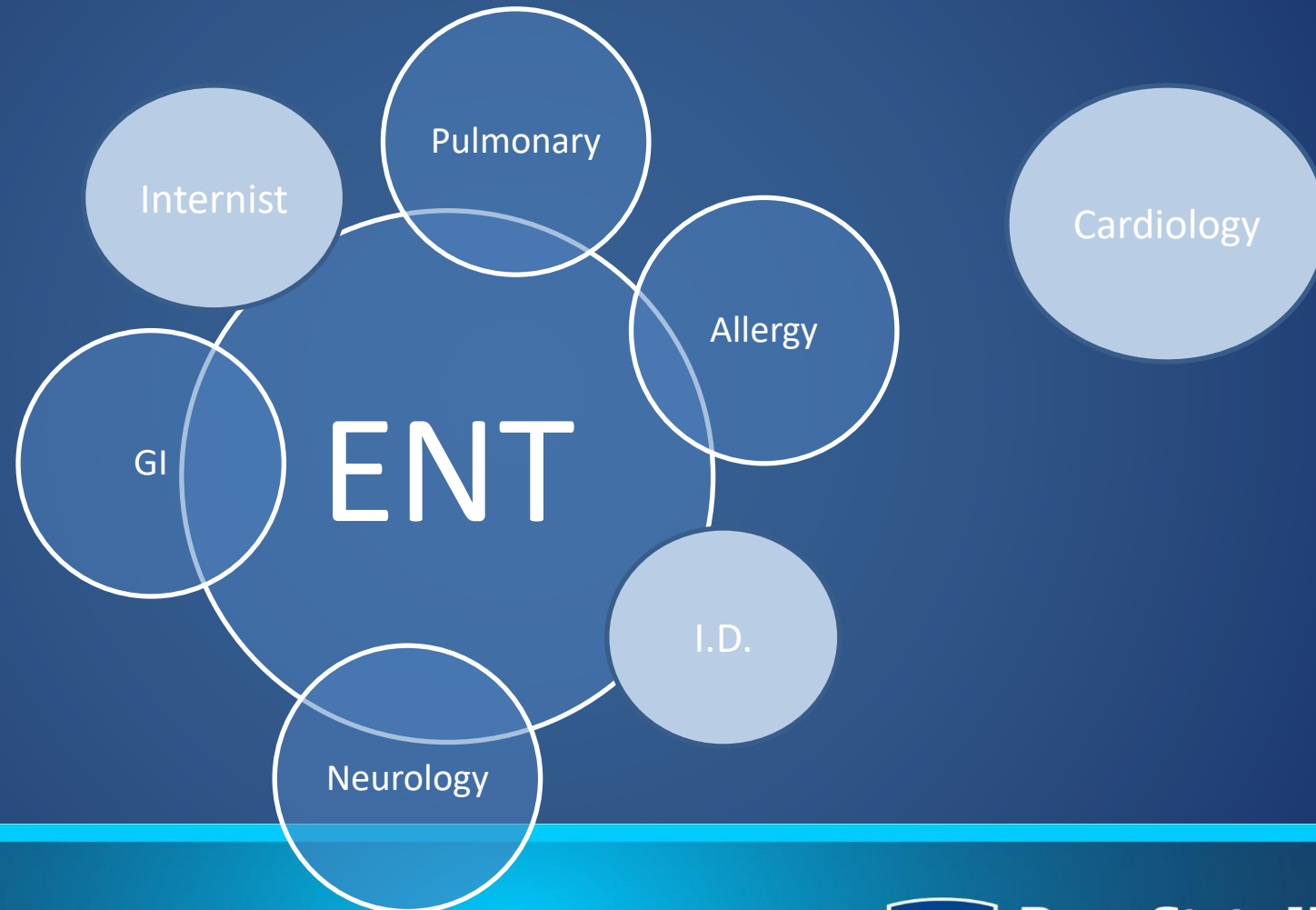


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Altman KW, et al. *J Allergy Clin Immunol Pract.* 7(6):1750-1755

# Chronic Cough: Why ENT?



# Chronic Cough: Work-up

- History
- History
- History
- Physical exam
  - Endoscopy – nose, throat, trachea, lungs, esophagus
- Imaging
- Blood Work
- Pulmonary function studies
- Allergy Testing
  - (Inhalant, Food)



# Red Flag Symptoms

- Hemoptysis
- Hoarseness
- Dysphagia
- Vomiting
- Systemic symptoms
  - Fever, weight loss, peripheral edema
- Dyspnea without exertion
- Current or former smoker aged 55-80 with a 30 pack-year history
- Abnormal respiratory exam or CXR concurrent with cough
- Recurrent pneumonia

Irwin RS, et al. *Chest*.  
2018, 153(1): 196-209



# CAUSES OF CHRONIC COUGH

Sorting out the symptoms



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# Infectious

- Upper Respiratory Tract Infection
    - Viral
      - Croup
    - Bacterial
    - Fungal
    - Superinfection
  - Pneumonia
  - TB
  - B.pertussis
- Symptoms/Associations
    - Timing – all day and night
    - Associated Sx.
      - Fever
      - Shortness of breath
      - Congestion
      - Body aches
      - Malaise
  - Tx.
    - Abx vs supportive



# Pulmonary

- Asthma
  - Cough variant asthma
- Chronic Bronchitis
- COPD
- Lung Cancer
- Foreign Body (children)
- Symptoms/Associations
  - Timing - random
  - Shortness of breath
  - Worse with exertion
  - History of smoking
- Tx.
  - Steroid inhaler
  - Pulmonary referral



# Gastrointestinal

- Reflux
  - Gastroesophageal reflux
  - Laryngopharyngeal reflux
- Laryngospasm
- Aspiration
- Mass
- Symptoms/Associations
  - Worse after meals
  - Worse at night
  - Associated with choking spells and sometimes vomiting
- Tx.
  - Diet/lifestyle
  - PPI/H2
  - Alginates



# Allergy

- Primary vs. Secondary
- Inhalant allergens
  - Postnasal drip
  - Tracheal/Bronchial irritation
- Irritants
  - Not true allergens
  - Hypersensitivity
- Symptoms/Associations
  - Seasonal
  - Post-exposure
  - Congestion
  - Runny nose
  - Watery eyes
- Tx.
  - Symptomatic
  - Immunotherapy



# Cardiac

- Heart failure
- Pulmonary edema
- Medications
  - ACE inhibitors
  - ARBs
- Symptoms/Associations
  - Dry cough
    - May occur after years
  - Shortness of breath
  - Orthopnea
- Tx.
  - Request to change meds
  - Cards referral



# 4 Most Common Causes

## UACS

Consider sinus imaging, nasopharyngoscopy, and allergy evaluation or empiric treatment

## GERD

Perform physiologic testing for refractory patients, consider treatment beyond acid suppression

## Asthma

Evaluate spirometry, bronchodilator reversibility, bronchoprovocation challenge, and allergy evaluation or empiric treatment

## NAEB

Evaluate sputum eosinophilia, eNO, and allergy evaluation or empiric treatment

- Upper airway cough syndrome
  - Postnasal drip
- Gastroesophageal reflux disease
- Asthma
- Non-asthmatic eosinophilic bronchitis

Irwin RS, et al. *Chest*.  
2018, 153(1): 196-209



# Diagnostic/Treatment Failures

- “I’ve seen every doctor in town and tried every medication in the book”
  - Multiple causes
  - Inadequate duration
  - Inadequate dosage
  - Poor compliance
  - Wrong diagnosis



# Neurogenic Cough

- Neuropathic Cough
- Hypersensitivity Cough
- Sensory Neuropathic Cough
- Laryngeal Sensory Neuropathy
- Post-viral Vagal Neuropathy
- Irritable Larynx



# Neurogenic Cough

- “Tickle” in the throat
- Dry cough
- Occurs all day long
  - 5-100s of episodes
- Often asymptomatic at night
- May go on for years (decades)
- Hypersensitive to “irritants” and other minor stimulants
- Diagnosis of exclusion



# Neurogenic Cough

- Often associated with: **Inducible Laryngeal Obstruction (ILO)**
  - Coughing when talking
  - Worse with stress
  - Shortness of breath
    - Misdiagnosed with asthma
  - Paradoxical Vocal Fold Motion



# So, what do I actually do?

- Careful history
- Review meds/prior treatments
- CT for smokers
- Videostroboscopy
- **Productive**
  - Infectious
  - UACS
  - Aspiration (chronic) - MBS
- **Dry**
  - Wakes patient at night?
    - Reflux (Asthma)
  - Cough when eating
    - Aspiration (acute) - MBS
  - Cough after eating
    - Reflux
  - Talking, laughing, strong smells, touching neck, “tickle” in throat
    - Neurogenic



# Diagnostic/Treatment Pearls



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# Diagnostic/Treatment Pearls



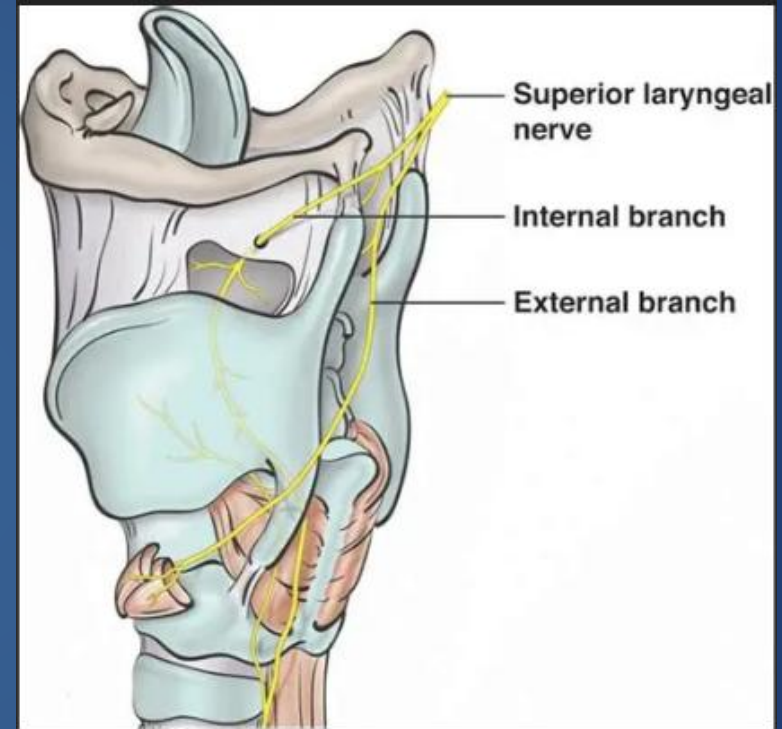
# Diagnostic/Treatment Pearls

- Labs for B. pertussis
  - IgG 3x upper limit of normal
- Wheezing (asthma/NAEB)
  - Steroid inhaler trial → Pulmonary
- UACS (6-8 weeks)
  - Nasal steroid +
  - Nasal antihistamine +
  - Nasal anticholinergic
  - +/- chlorpheniramine
  - CT sinus
- Reflux (3-4 months)
  - Diet/lifestyle
  - High dose PPI QD and
  - High dose H2 blocker QHS
  - If no response, trial alginates QID
  - Barium esophagram
  - EGD/TNE, consider HREM
- Paresis or glottic insufficiency
  - Trial injection medialization



# Neurogenic Cough: Treatment

- Cough therapy
  - SLP
  - Remove menthol → pectin/glycerin
  - Cough tracker app
- Neuromodulators
  - Amitriptyline (nortriptyline)
  - Gabapentin
  - Tramadol
- SLN Block
  - 1cc 0.5% bupivacaine
  - 1cc triamcinolone 40mg/mL



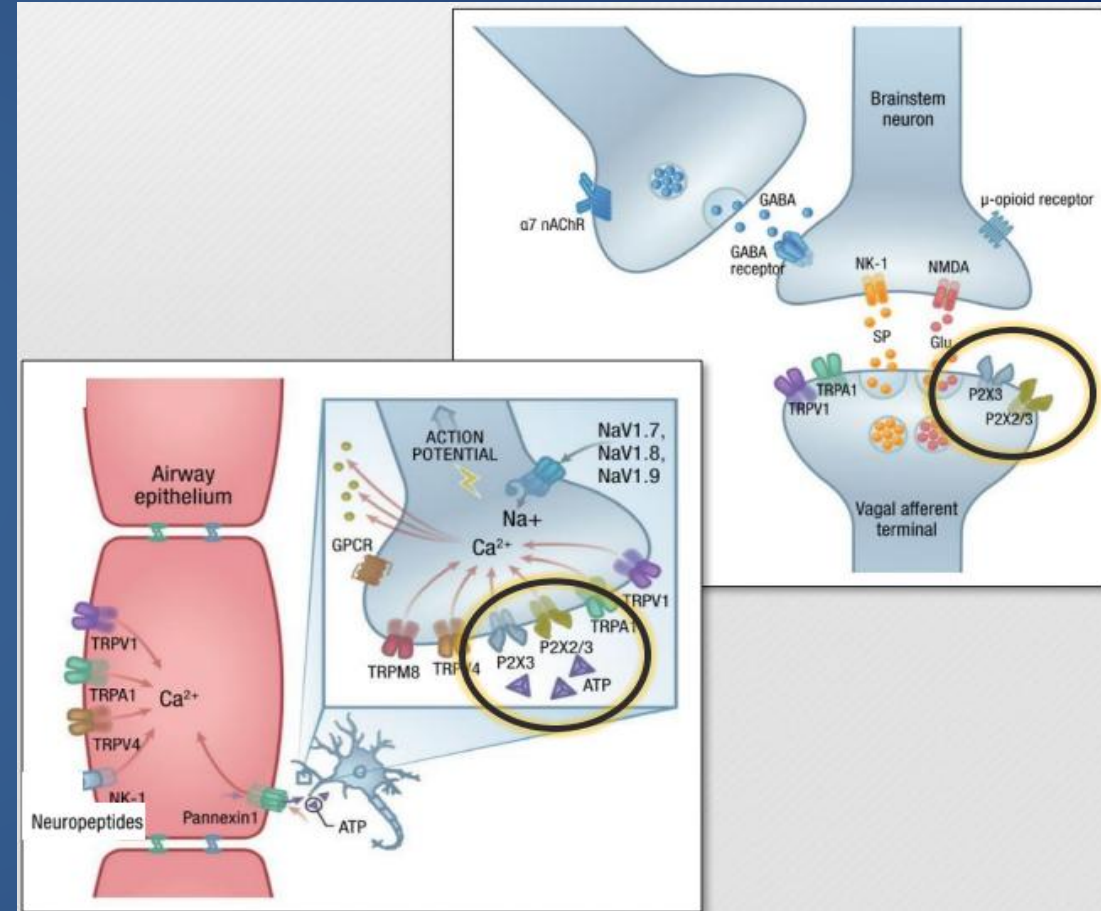
Vertigan AE, et al. *Lung*. 2012;190(1): 35-40.

Simpson CB, et al. *Laryngoscope*. 2018; 128(8): 1898-1903.



# Neurogenic Cough: Emerging Therapeutics

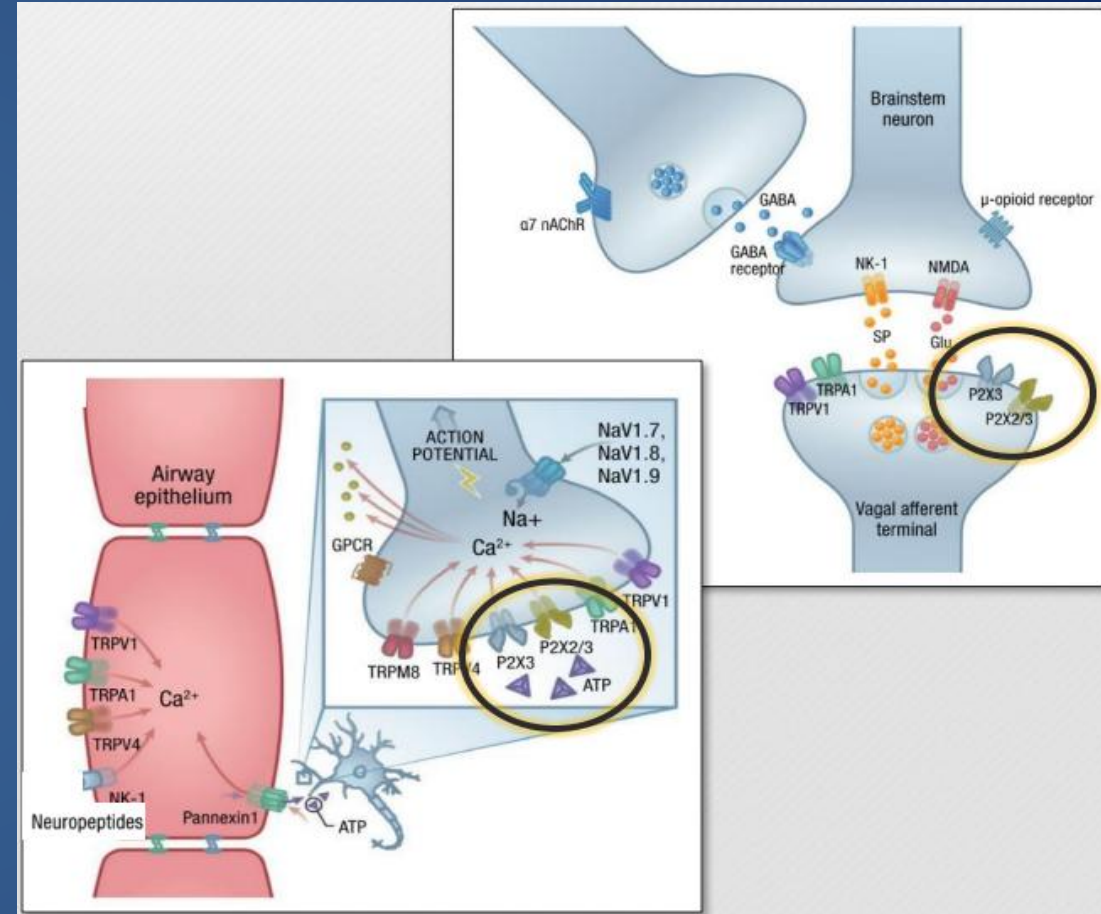
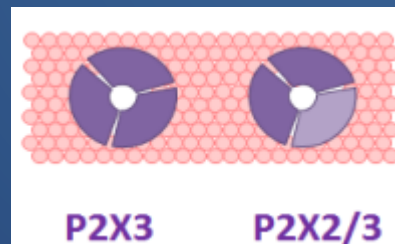
- P2X3 Receptor
  - ATP-gated ion channel
  - Crucial role in sensory signaling
- P2X3 Receptor blockers
  - gefapixant
  - eliapixant
  - filapixant
  - sivopixant
  - camplipixant



Mazzone SB, et al. Clinical Pharmacol Ther. 2021;109(3):619-636

# Neurogenic Cough: Emerging Therapeutics

- P2X3 Receptor blockers
  - gefapixant (FDA rejected '22)
  - eliapixant (abandoned '22)
  - filapixant
  - sivopixant
  - camplipixant (completed Stage III)
- Challenges
  - Placebo
  - Taste disturbance

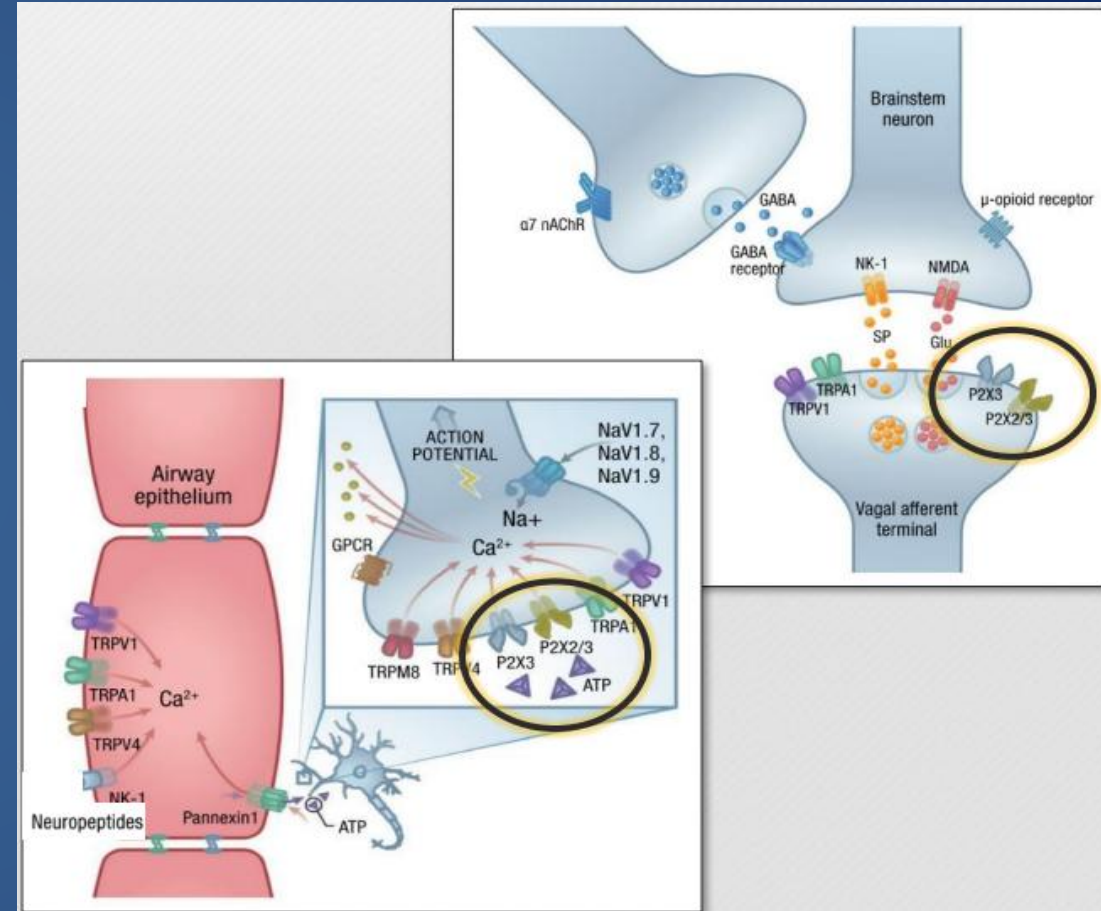


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# Neurogenic Cough: Emerging Therapeutics

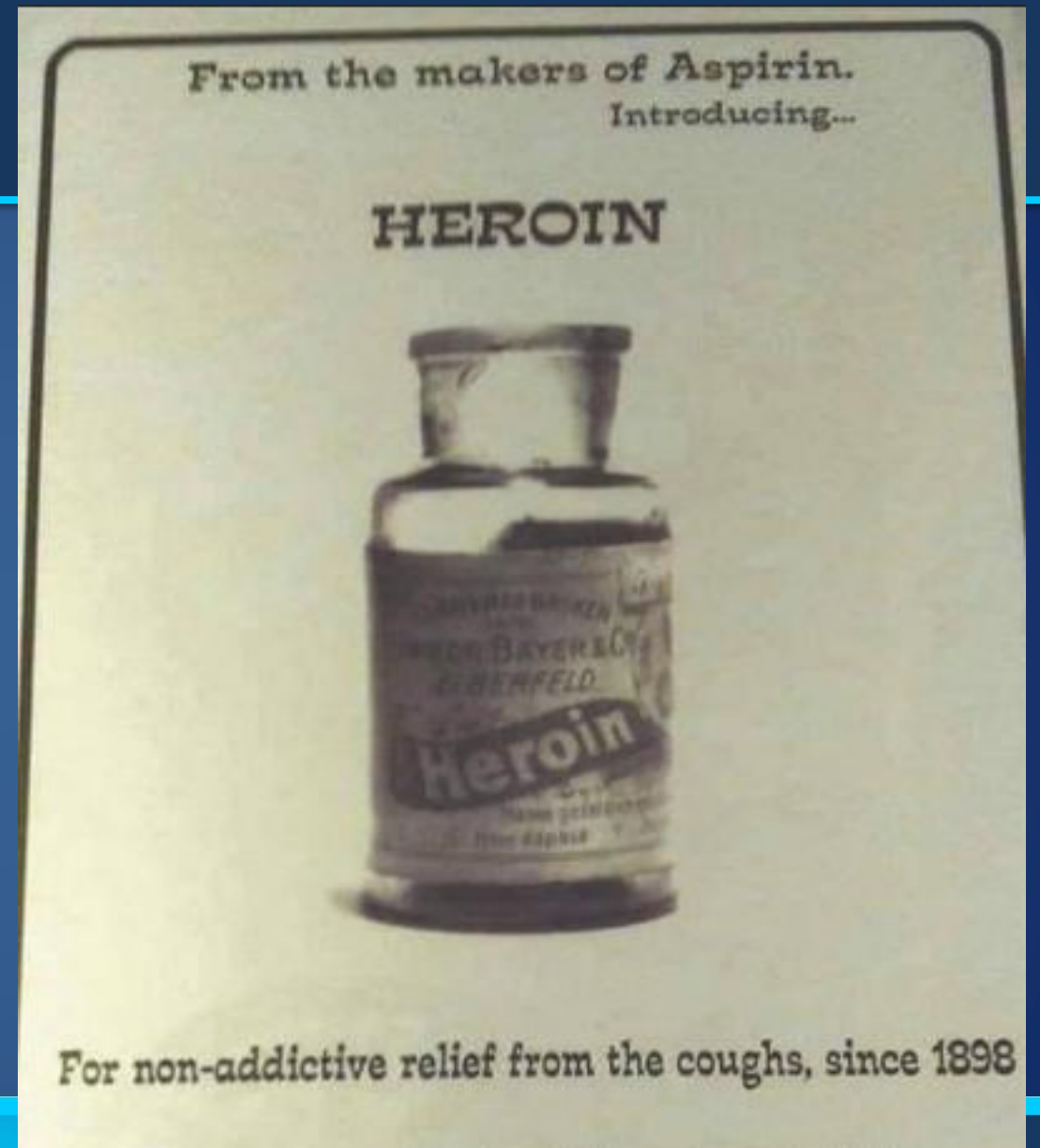
- Other novel therapeutics in trial
  - TRPM8 agonists
    - Activated by cold temp or cooling agents
    - Menthol
  - NK-1 (neurokinin) antagonists
    - Affects release of substance P
  - Opioid receptor agents (nalbuphine ER)
    - mu antagonist
    - kappa agonist
  - Voltage-gated sodium channel blockers



Mazzone SB, et al. Clinical Pharmacol Ther. 2021;109(3):619-636



# When all else fails...



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