



# Non-cardiac Chest Pain (NCCP)

## NCCP Overview

- [What is non-cardiac chest pain?](#)
  - Non-cardiac chest pain (NCCP) is chest pain in patients who do not have heart disease.
  - The pain can be felt behind the breast bone. It can be squeezing or pressure-like. It may extend to the neck, left arm or the back.
  - The pain may be caused by eating or drinking.
  - It can last from a few seconds or minutes to many hours.
  - Patients may have other symptoms such as heartburn or regurgitation.
  - Because NCCP may feel similar to heart pain, patients should ask their doctor to exclude heart disease.
- [Why is cardiac and NCCP similar?](#)
  - The heart and the food pipe are located next to each other in the chest (Figure 1).
  - Because the same nerves travel through both the heart and the food pipe, pain from either organ can feel similar.
  - A very common source of NCCP is from the food pipe.

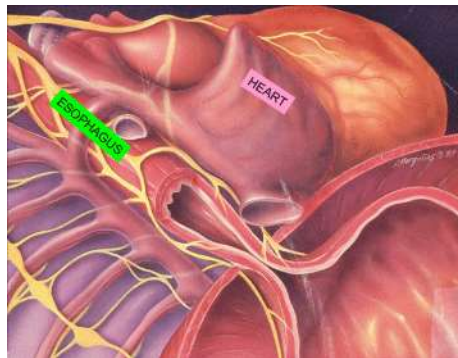


Figure 1. The heart and the esophagus are located next to each other in the chest and also share the same nerves.

## Causes

- [What are the causes of NCCP?](#)

NCCP can be due to disorders of the food pipe. It can also be due to parts of the body outside of the food pipe.

  - Causes of NCCP due to the food pipe:**
    - Acid Reflux (GERD)**
      - The most common cause of NCCP is acid reflux.
      - 20-60% of patients with NCCP suffer from acid reflux.
      - Patients may also have heartburn or regurgitation.
    - Muscle disorders of the food pipe:**
      - When the muscles of the food pipe do not work properly, it can cause NCCP. Examples include:
        - o Muscle spasms
        - o High pressure squeezing of the food pipe muscles
        - o Absent movement of the food pipe muscles due to a loss of nerve cells (achalasia). It is important to diagnose achalasia since it can be treated.
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  - Sensitive food pipe:**
    - Patients with NCCP may have a food pipe that is sensitive. This means that small changes in pressure or acid (from eating or drinking) may cause pain.

- Although the cause of this higher sensitivity is unknown, there are ways to treat it.

### III. Causes of NCCP outside of the food pipe:

- Bone and muscle disorders of the chest wall or back
- Lung disorders
- Disorders of the layers of tissue that cover the lungs
- Disorders of the layer of tissue that protects the heart
- Ulcers
- Gallbladder disorders
- Pancreas disorders
- Tumors (more so in patients past age 50)

## The Role of Stress:

- Some patients with NCCP also suffer from stress that leads to depression, anxiety or panic attacks.
- It is not known whether the stress came first or the chest pain led to the changes in mood. Treatment of these conditions is an important part of treating NCCP.

## Risk Factors

- NCCP can occur in kids as well as older adults.
- It affects both men and women. NCCP may be more common in women, but the reasons why are not well known.
- NCCP is a very common problem that occurs globally.
- 70 million patients in the U.S. suffer from NCCP.
- No other specific risk factors have been found.

## Diagnosis

- [What do I do if I've been treated for chest pain, but told I didn't have a heart attack?](#)
  - Heart diseases should be ruled out before being diagnosed with NCCP.
  - A common first treatment for NCCP are acid blocking drugs. These are called proton pump inhibitors (PPIs). If taking 2 weeks of PPIs improves the chest pain, then acid reflux is the likely cause. PPIs can both diagnose and treat NCCP.
  - If NCCP is improved by PPIs, the treatment can be used for longer (2 months).
  - If the patient does not improve after taking PPIs, further testing may be done to:
    - o Measure acid levels in the food pipe
    - o Look inside the food pipe and stomach with a camera
    - o Measure how well the food pipe muscles squeeze
    - o Image other organs in the belly

## Treatment

- a. Patients may be treated as if the NCCP was due to acid reflux:**
  - Acid blocking drugs called proton pump inhibitors (PPIs) can be used to treat NCCP, since the most common cause of NCCP is acid reflux.
  - PPIs should be taken 30 minutes before breakfast for 2 weeks. About 80% of patients with NCCP due to GERD feel better after trying PPIs.
  - If the patient improves, the treatment can be continued for several months.
- b. For patients who don't improve after taking PPIs, GERD may not be their source of NCCP:**
  - It is important to know that other treatments are available. These drugs act on the nerves that travel through the esophagus to reduce pain.
  - These drugs can also be used to treat depression, anxiety or panic attacks. The doses used for NCCP are much lower.
- c. Treating stress:**
  - If patients do not feel better with the above treatments, or they suffer from depression, anxiety, or panic attacks, they should seek further help. This may include seeing a psychiatrist.
  - Talk therapy, hypnosis, and coping skills training can improve NCCP.
  - New studies are being done to find new treatments for NCCP.

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[Return to Top](#)