

## Resonance Disorders

### What is a resonance disorder?

Resonance refers to the way airflow for speech is shaped as it passes through the oral (mouth) and nasal (nose) cavities. During speech, the goal is to have good airflow through the mouth for all speech sounds except m, n, and ng. To direct air through the mouth, the soft palate (back part of the roof of the mouth) lifts and moves toward the back of the throat. This movement closes the velopharyngeal valve (opening between the mouth and the nose). See the diagram below.

A resonance disorder occurs when there is an opening, inconsistent movement, or obstruction that changes the way the air flows through the system.

### What causes a resonance disorder?

The most common cause of a resonance disorder is cleft palate but children with a submucous cleft palate, childhood apraxia of speech, enlarged adenoids and/or neurological disorders may also have a resonance disorder.

When a resonance disorder is the result of incomplete or inconsistent closure of the opening between the mouth and nose, it is called **Velopharyngeal Dysfunction (VPD)**. There are three main types of velopharyngeal dysfunction:

- **Velopharyngeal Incompetence:** incomplete closure of the velopharyngeal valve due to a neurological problem.
- **Velopharyngeal Insufficiency (VPI):** occurs due to an anatomical or structural defect such as a short soft palate. This is most commonly associated with cleft palate.
- **Velopharyngeal Mislearning:** the child has not learned how to use the velopharyngeal mechanism appropriately.

A resonance disorder may also occur when there is an obstruction in the oral or nasal cavities that blocks regular airflow.

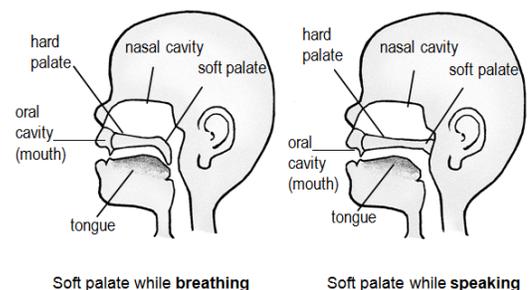
### What are the signs of a resonance disorder?

Signs of a resonance disorder due to incomplete or inconsistent closure of the velopharyngeal valve may include:

- **Hypernasality:** too much sound coming from the nose during speech.
- **Nasal Air Emission:** air leaks through the nose while trying to build up pressure for consonant sounds.
- **Weak or omitted consonants.**
- **Short utterance length** due to loss of air through the nose.
- **Compensatory speech errors.**
- **Phoneme-Specific Nasal Emission of Air:** audible nasal air loss on only a few sounds (usually s and z). This is a result of velopharyngeal mislearning, not a structural issue.

Signs of a resonance disorder due to an obstruction may include:

- **Hyponasality:** decreased airflow through the nose due to a blockage in the nose, such as during a bad cold.
- **Cul-de-Sac Resonance:** airflow through the mouth is obstructed, often by enlarged tonsils, resulting in a “muffled” speech quality.



## How is it diagnosed?

A resonance disorder is often diagnosed by a speech-language pathologist (SLP) and/or ear, nose and throat doctor (ENT) who specializes in these types of issues.

During an evaluation, a speech-language pathologist may assess your child's articulation (how speech sounds are made) and resonance through a variety of activities including:

- talking to your child
- giving a standardized test
- nasometry (a computer-based program)
- nasal endoscopy

Based on the results from the evaluation, the SLP may recommend speech therapy and/or a referral to an ENT who specializes in resonance disorders.

## How is it treated?

At Children's Hospitals and Clinics of Minnesota, we use two main ways for treating resonance disorders:

- Speech therapy is a great tool for children who have speech errors and may be an effective treatment option for mild resonance disorders. The goal of therapy is to help a child learn to use his/her tongue, lips and velopharyngeal valve correctly.
- "Speech Surgery," such as a pharyngeal flap or sphincter pharyngoplasty, may be recommended to correct moderate to severe velopharyngeal dysfunction. A surgery is a big decision and not a "quick fix." Your child may need speech therapy before and after the procedure. The SLP and ENT will work closely with you and your child to decide if your child may benefit from surgical intervention to improve velopharyngeal incompetence.

## How should I care for my child?

If you think that your child may have a resonance disorder, please talk about your concerns with your child's primary care provider and consider a speech-language evaluation at one of the following Children's Hospitals and Clinics of Minnesota locations:

- Children's - Maple Grove 763-416-8700
- Children's - Minneapolis 612-813-6709
- Children's - Minnetonka 952-930-8630
- Children's - Roseville 651-638-1670
- Children's - St. Paul 651-220-6880
- Children's - Woodwinds 651-232-6860

## Questions?

This sheet is not specific to your child, but provides general information. If you have any questions, please call your clinic. For more information about resonance disorders, you may contact:

- Cleft Palate Foundation: [www.cleftline.org](http://www.cleftline.org)
- Children's Hospitals and Clinics of Minnesota Cleft and Craniofacial Clinics: 612-813-6888

For more reading material about this and other health topics, please call or visit the Family Resource Center library, or visit our website: [childrensMN.org/A-Z](http://childrensMN.org/A-Z).