

Introduction to Speech

Speech is how we say sounds and make words to communicate. Speech includes:

- **Articulation:** How we make speech sounds using the mouth, lips, and tongue. For example, we need to be able to say the "r" sound to say "rabbit" instead of "wabbit."
- **Voice:** How we use our vocal folds and breath to make sounds. Our voice can be loud or soft or high or low-pitched.

See the website of the [American Speech-Language-Hearing Association](#) for more information.

How We Produce Speech (How We Talk)

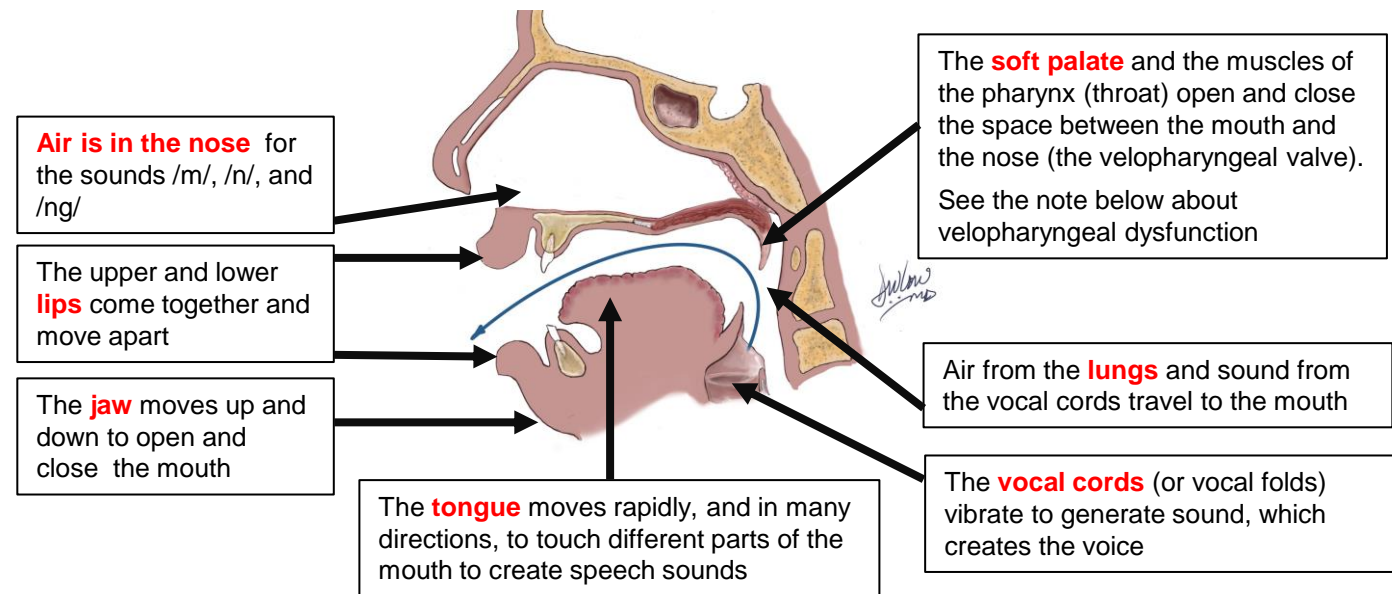
The production of speech involves the following processes:

1. **Respiration** – the continuous cycle of breathing in and out
 - When we speak, we take in a breath and then we speak on the exhaled air
2. **Phonation** – the production of sound by the vocal cords
 - The exhaled air goes up between the vocal cords which vibrates the outgoing air and makes sound, which is our **voice**. The faster the vibration, the higher the voice.
3. **Articulation** – the formation of distinct sounds of speech
 - When the outgoing air continues up to the the mouth, the lips, tongue, teeth, and palate shape the air stream into **speech** sounds. The production of speech requires precisely coordinated movements.
4. **Resonation** – the balance of air between the mouth and nose during speech
 - The palate and the back of the throat (pharynx) work together to control how much air is in the mouth and in the nose. Too much air in the nose results in **hypernasal speech** (such as when you have VPD), while too little air in the nose results in **hyponasal speech** (like when you have a cold). When the air is directed to the mouth and separated from the nose, it allows the build-up of pressure in the mouth, needed for most speech sounds.

Structures Involved in Producing Speech

These diagrams are simplified representations of the anatomy.

Not shown here, but very important, are the **brain** and the **nerves** that control all the muscle movements.

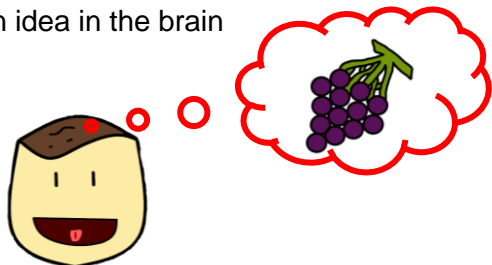


Velopharyngeal dysfunction (VPD), with or without a **submucous cleft palate**, is a common problem in individuals with 22q11.2 deletion syndrome (22q11.2DS). In VPD the **velopharynx** (the back of the palate and the throat) cannot close the space that connects the mouth and the nose. VPD can have a major impact on speech. Less commonly, children with 22q11.2DS have an **overt cleft palate**. For more information, please see the **Palate Series** in [Health Conditions Explained](#).

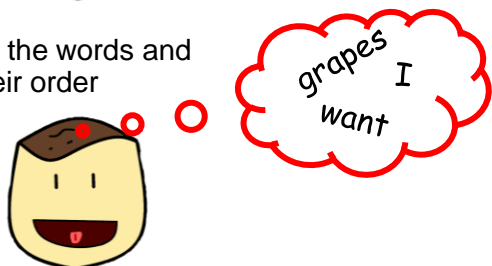
Introduction to Speech (continued)

From Thinking to Talking

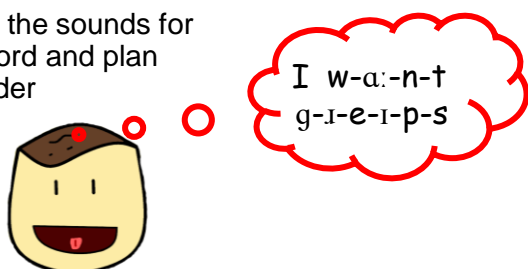
1. Form an idea in the brain



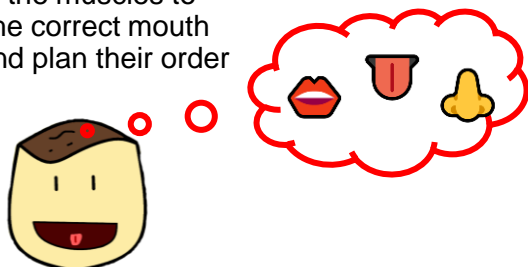
2. Choose the words and plan their order



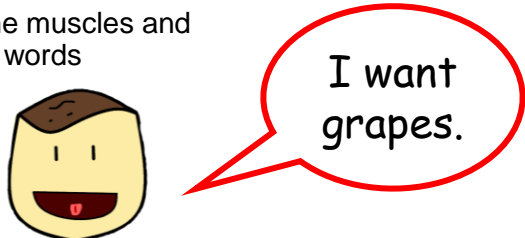
3. Choose the sounds for each word and plan their order



4. Choose the muscles to move the correct mouth parts and plan their order



5. Move the muscles and say the words



The Important Role of Hearing in Speech Development

Producing speech is a complex task. Speech development is a process that takes many years to learn and lots of practice. When children learn to speak, they are figuring out the patterns of how to move their muscles in order to produce speech that other people can understand.

Hearing sounds and words are important for children to learn to talk and understand. Children with hearing impairment can miss out on perceiving speech sounds, which can lead to a delay in speech development. Delayed speech can, in turn, affect school performance, social life, and self esteem. **Since hearing loss is a common problem in 22q11.2DS, routine evaluation of hearing is strongly recommended.**

References / Resources

Clinical practice recommendations

- [Updated clinical practice recommendations for managing children with 22q11.2 deletion syndrome](#) – 2023
- [Updated clinical practice recommendations for managing adults with 22q11.2 deletion syndrome](#) – 2023
- [Speech-Language Disorders in 22q11.2 Deletion Syndrome: Best Practices for Diagnosis and Management](#) – 2019

Information from medical or academic institutions

- [What is Speech? What is Language?](#) – American Speech-Language-Hearing Association
- [Understanding Consonants and Vowel Phonemes in English](#) – Handout from Colorado Department of Education
- [Hearing Loss: How It Affects Communication](#) – Cincinnati Children's Hospital
- [Effects of Hearing Loss on Development](#) – American Speech-Language-Hearing Association