



## VAGUS NERVE & ABDOMINAL DISTENTION

### INTERNAL DOCUMENT - NOT FOR DISTRIBUTION

The vagus nerve is the 10th cranial nerve, also known as the "wandering" nerve. The longest cranial nerve, it emerges from the brainstem, passes through the neck and chest to the abdomen, and branches to most major organs in the body. The vagus nerve serves many areas of the body but for lesson purposes, it carries information about the condition of the stomach, intestines, esophagus, throat, and ear to the brain.

When the stomach is distended, it is likely to put pressure on the vagus nerve as it passes through the abdomen. Abdominal distention can occur when air is rapidly inhaled into the lungs, for example during crying, and can appear to the body as a solid object. The esophagus senses this air incorrectly as food and directs it into the stomach rather than into the lung. Since the stomach has no vent to let the air escape, it may become bloated or distended. Often the pressure is relieved when it becomes significant enough to momentarily push open the pyloric valve (the muscle that holds the stomach closed) from the inside, letting the air escape as a burp.

This valve is often immature and underdeveloped in small children, which may result in difficulty achieving a burp, or release of air. It also may result in vomiting or spitting up (depending on the current contents of the stomach) as the food in the stomach escapes with the air unintentionally.

Students who do not have well established breath control may have additional difficulties with abdominal distention due to swallowing water that ends up in their mouth when the mouth is not completely closed during submersion. This extra water cannot be digested quickly and also expands the stomach.

A vagus nerve attack or vasovagal response can occur when the vagus nerve is stimulated. Symptoms of a vasovagal response include a slowed heart rate, dilation of blood vessels in extremities, lowered blood pressure in the brain and heart, sweating, nausea, headache, lethargy, change in consciousness, fainting, vomiting, lowered body core temperature, muscle weakness, and inability to coordinate movement due to diverted blood flow. In Swim Safe Now lessons, **any change in consciousness should be treated as an emergency with immediate follow up with the student's doctor and subsequent Swim Safe Now Emergency notification to Ginger Blackman at (321) 698-5840.**

Vomiting can also result from a distended abdomen. Vomiting should never be considered a normal part of a Swim Safe Now lesson. If a child does vomit during a lesson, the lesson

MUST end. The lesson should be reviewed for signs of improper breath control, especially if a new skill is being introduced. It is also important to discuss the occurrence of teething or an ear infection with the parent. Teething is a frequent cause of loss of breath control in lessons, as are ear infections. If the vomiting reoccurs in the next or subsequent lessons, please ask the parent to complete a registration update. Swim Safe Now Registration will likely request video until the cause of the vomiting can be determined and eliminated.

## Swim Safe Now® Protocols

### **LEFT SIDED RECOVERY**

Consistently utilize the proper handout technique by placing students on their left side onto 2 layered towels, facing away from the pool.

The vagus nerve resides primarily on the right side of the abdomen. Therefore, left side recovery decreases the amount of pressure on the vagus nerve. The only students who will NOT utilize the left side recovery are those who have been diagnosed with heart condition known as a Patent Ductus Arteriosus (PDA). Students with PDA or even PDA's that have been repaired will recover on their RIGHT side following lessons.

### **PREVENTION OF ABDOMINAL DISTENTION & VAGAL NERVE PRESSURE**

Manage Fatigue: Air in the abdomen can be mistaken by the body as food, causing blood to be diverted from the muscles to the digestive system because there is a perceived need to digest the mass in the stomach (air in this case). Temperature fatigue during the lesson increases the likelihood of a vagal response. VC checks should be performed throughout the lesson to assess temperature fatigue. Physical fatigue is also likely - think about how you feel after a big meal.

**Frequent Burping:** If a distended abdomen is observed, encouraging the child to burp may relieve the added pressure. Utilizing massage up the spine, rather than patting the back is less intrusive and less likely to stimulate the vagus nerve. Facing the child away from you while seated on your knee or supported across the chest also avoids adding to the abdominal pressure and has the added advantage of affording you protection should vomiting occur. You should never press the abdomen to assess abdominal distention. Abdominal distention should be addressed proactively. If abdominal distention becomes visible, this is a signal to **END THE LESSON** if the pressure cannot be relieved immediately by proper burping techniques.