



Susan Langmore

Swallowing is something most of us take for granted, from enjoying the last swig of morning coffee to clearing our throat before making an important announcement.

Individuals with dysphagia or a swallowing disorder may struggle to accomplish these simple activities, explains Susan Langmore, PhD, CCC/SLP, BRS-S. Beyond difficulty with activities like these, a serious swallowing problem may have even worse health consequences. A person with dysphagia may not be able to eat properly, resulting in weight loss, or they may aspirate, forcing food or liquid into their lungs, which can result in pneumonia.

Langmore explains that while working with swallowing patients, clinicians may try to introduce foods with various consistencies to determine whether a patient may be able to eat a thin or thick liquid. Other ways to help individuals swallow include changing their position while they eat.

While these methods sometimes help a patient, they may not always be successful, and a feeding tube may be necessary to ensure proper nutrition.

Langmore, who joined the Department of Speech, Language & Hearing Sciences in the summer of 2007 as a clinical professor, is currently researching another method to improve swallowing in patients with dysphasia.

Through a grant from the National Cancer Institute at the National Institutes of Health, Langmore is leading an investigation into whether exercise paired with electrical stimulation can improve swallowing problems in

DYSPHAGIA: Testing a New Treatment Technique

head and neck cancer patients three to six months after radiation therapy.

Radiation therapy can cause the tissue in the throat to scar, and scar tissue is not as pliable as regular skin. Because this scar tissue is not as malleable, when a patient tries to swallow, the throat muscles do not contract as much as they would in a normal person. The treatment will hopefully keep the muscles working, so that they do not stiffen, and swallowing will improve.

At 14 different sites around the country, Langmore's study will evaluate the effect of electrical stimulation and exercise on swallowing in 240 patients, who will be randomly placed into one of two groups.

In the experimental group, patients will use an electrical stimulation device, placed on the skin under the chin, along with swallowing exercises. They will undergo three, 20-minute sessions a day, six days a week, for three months. During each session, a

tone in the electrical stimulation device will indicate that they are to swallow forcefully 60 times over the course of each treatment.

"It's a very intense program," Langmore said. She explains that when the electrical stimulation comes on, it should help the muscles under the tongue contract. This is important because those muscles are active very early in the sequence of swallowing. "I like to think of it as sort of a jump start to the swallow."

The control group will undergo the same steps but their device will not administer electrical stimulation.

To determine what part, if any, the electrical stimulation device played in patients' recovery, speech pathologists will measure several swallow parameters from recorded video fluoroscopy studies done before, in the middle of treatment and after treatment. Quality-of-life instruments and other functional measures will be given as well. The goal is to answer the questions, "Does the swallow get better? Does the patient's diet improve and does he or she report a better quality of life?"

While the clinicians who prescribe the therapy for the patients will know who receives a true electrical stimulation device, those who analyze the swallows will not know.

Langmore's clinical trial began in 2007, and the first year was spent preparing clinicians to implement the study, writing procedures, and getting approval from the local institutions' review boards before beginning. They expect to begin registering patients for the study on September 1, 2008.

Langmore said that electrical stimulation is used frequently in the field of physical therapy, and has also recently become popular for treating patients with dysphagia despite a lack of solid research to prove its effectiveness.

"I believe this study is important because no one has ever studied whether intense exercise really helps patients with swallowing problems secondary to head and neck cancer treated with radiation therapy," Langmore said. "Our experience has told us this is effective, but no one has ever proven it." She hopes her efforts shed light on the issue.

"Although I do think it's very promising, we need a good trial to see who it helps," she said. "I think it will have an impact—whether the results are positive or negative, we're going to know more about the effectiveness of our treatment."

Aside from her research, Langmore sees patients at Boston Medical Center and teaches at BU Sargent College. In addition to these activities, she is also known in her field for having developed a frequently used procedure for evaluating dysphagia: fiberoptic endoscopic evaluation of swallowing, or FEES.

Right: Susan Langmore, clinical professor, Department of Speech, Language and Hearing Sciences at BU Sargent College, and professor, Department of Otolaryngology-Head and Neck Surgery at BU Medical Center. Above: Langmore displays the electrical stimulation device and where it is placed on the patient; Langmore working with a swallowing patient; an anatomical model of the musculature and other major structures used for swallowing.