

# UCDAVIS NEWSLETTER

## CENTER FOR VOICE AND SWALLOWING

### Our Unicorn Comes Home

**After receiving an allogenic bone marrow transplant in June, our beloved Director of Speech Pathology, Lisa Evangelista, is back at home. If all continues to go well, we anticipate that she will return to work in December.**

"In the face of a devastating diagnosis, I learned the meaning of '**nobody fights alone.**' After being diagnosed with leukemia, hundreds of you registered with Be The Match, the National Bone Marrow Donor Program. Donor drives were organized around the country by friends, colleagues and people within the dysphagia community. These efforts have provided hope for thousands of individuals living with blood cancers.

After undergoing several rounds of chemotherapy, total body irradiation and a month-long hospitalization, I received a life-saving stem cell transplant on June 15, 2017. While I am still in the critical window of recovery, I am optimistic for a lasting cure and look forward to a cancer-free future.

It is with great joy that I am able to express my sincere gratitude to all of you who have registered with Be The Match, promoted my campaign, and have fought alongside me throughout this journey. Your support and kindness has been inspirational."



**We miss you Lisa...**

<https://youtu.be/FYtq9t4TP5I>

## SUBJECTIVE ASSESSMENT OF SWALLOW STUDIES LACKS ACCURACY

The videofluoroscopic swallow study (VFSS) is the gold standard diagnostic tool to evaluate oropharyngeal dysphagia. Despite its popularity and widespread use, there is no universal method of VFSS analysis. Most clinicians rely solely on subjective interpretation.

Experienced clinicians blindly reviewed over 70 VFSSs. Evaluators subjectively rated each video as "normal" or "abnormal" for the parameters of hyoid elevation, pharyngeal area, pharyngeal constriction ratio, and pharyngoesophageal segment opening.

**Evaluators correctly classified less than two-thirds of all investigations.** There was moderate inter-rater agreement



among clinicians. Internal consistency among individual evaluators was fair to moderate. **Only one-quarter of the time did experienced clinicians agree on the correct interpretation of a VFSS clip.**

**Our findings highlight the variability inherent to VFSS analysis and emphasize the importance of validated objective fluoroscopic assessment.**

Lee JW, Randall DR, Evangelista LM, Kuhn MA, Belafsky PC. Subjective Assessment of Videofluoroscopic Swallow Studies. Otolaryngol Head Neck Surg. 2017 May;156(5):901-905.

# ***FARWELL TAKES THE REIGNS***



**It is with great pleasure that we congratulate Dr. Gregory Farwell on his new role as Professor and Chairman of The Department of Otolaryngology - Head and Neck Surgery at UC Davis. We celebrate this great achievement and look forward to years of inspirational leadership.**

## THE END OF THE PPI ERA

### PROTON PUMP INHIBITORS IN 2017

#### *Concerns, Awareness & Alternatives*

Since their introduction and popularization in the 1990's, proton pump inhibitors (PPIs) have become the third most widely sold drug in the United States. As a medication class, they are highly effective anti-secretory agents for the treatment of gastroesophageal reflux, erosive esophagitis, and peptic ulcer disease.

Widespread PPI use over the past decades has been facilitated by its favorable safety profile. Mounting evidence, however, suggests that chronic PPI use may not be as safe as once thought. Potential complications include fractures, infection, cardiovascular disease, renal insufficiency and dementia. ***Population studies suggest that PPIs are over-prescribed in up to 63% of outpatients and up to 81% of inpatients. If patients remain on these medications indefinitely, the exposure may translate into unnecessary risk.***

Concerns over PPI safety have recently been covered by public news agencies and popular media. The growing awareness of side effects and patient education will influence PPI use and usher in a post-PPI era.

At the UC Davis CVS, Dr. Anais Rameau set out to investigate patient concerns and education regarding PPI use and side effects. Forty-six patients who take or recently took PPIs for gastroesophageal or laryngopharyngeal reflux completed questionnaires regarding the level of concern of PPI side effects. ***Over one-half of surveyed patients were concerned about PPI side effects.***

Patients reported that the most common source of PPI side effect information was from healthcare professionals.

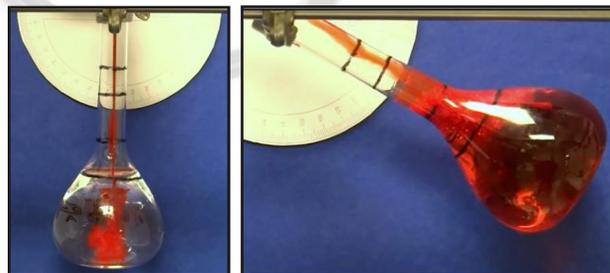
#### ***PATIENT CONCERNS REGARDING PPI USE***

***Bone Fracture***  
***Cardiovascular Risk***  
***Kidney Disease***  
***Infection Risk***  
***Alzheimers Disease***

PPIs are highly effective drugs that can cure disease. Great responsibility, however, rests with healthcare providers to educate their patients regarding the longterm risks.

For some patients, alternative medical therapies may be considered. Among popular agents are antacids and alginates. Sodium alginate is derived from seaweed or kelp and reacts with calcium ions and stomach acid to form a floating foam raft in the stomach which creates an effective barrier in preventing gastroesophageal reflux.

At the UC Davis CVS, Dr. Ahmed Bayoumi performed a laboratory comparison of several commercially available alginate-containing antacids as well as a home brew formulation. The time until raft formulation, amount of product required to raise the pH > 4, and the coherence of the raft was measured and



compared between agents. Gaviscon Original Chewable and the Gaviscon Double Action Liquid afforded the best protection against reflux.

Our approach to the treatment of chronic reflux at the CVS is to wean patients off of reflux medication with a combination of behavioral modifications, a healthy lifestyle, and alginate formulations whenever possible.

If these PPI alternatives are unsuccessful in managing patient symptoms and disease, we employ an interdisciplinary step-up approach that may include any combination of endoscopic Stretta, fundoplication, Lynx, and bariatric surgery. ***It is essential that each individual receive an individualized management strategy to limit medication side effects, reduce the risk of disease complications, and optimize quality of life.***

## REACHING NEW PEAKS

### *Altitude Training Masks for Respiratory Muscle Strength Training in Dysphagia*

Dysphagia exercise is one of the most commonly utilized treatments for swallowing dysfunction. Among the available exercise-based therapies, respiratory muscle strength training has emerged as an effective treatment to improve cough, voice and swallow function. Expiratory muscle strength training (EMST) targets respiratory muscles by using a resistive hand held device. The EMST 150 is a valved device with adjustable pressure threshold resistance from 0-150 cmH<sub>2</sub>O. The valve opens once sufficient expiratory airflow is produced thereby providing biofeedback to the user. This tool capitalizes on exercise and neural plasticity to rehabilitate pharyngeal swallow impairment. The device has proven effective in enhancing swallowing safety in patients with various neurodegenerative disease.

Investigators at the UC Davis CVS sought to determine the feasibility of using a high elevation training mask for similar therapeutic applications in individuals with swallowing impairment. The high elevation training mask is a resistance breathing device capable of strengthening respiratory muscles originally designed to simulate a high altitude environment. In contrast to the EMST 150, the training mask is a resistive device with four types of resistance caps (8, 4, 2 and 1-hole caps) and two types of flux valves. Six altitudes can be simulated: 3000, 6000, 9000, 12000, 15000 and 18000 feet.

UC Davis research fellow Dr. Marco Shen compared the expiratory resistance pressures of the two devices. The maximum expiratory resistance pressure (0.25 psi) achieved with the high elevation training mask was similar to the minimal resistance pressure (0.3 psi) of the EMST 150. The high altitude training mask at the maximal resistance cap/valve combination for just 20 minutes per day (240 - 300 breaths) will generate cumulative resistance pressure of 60- 75 psi which is comparable to—or perhaps higher than—the cumulative resistance pressure generated by the EMST 150 (50 psi) when used as described in the manufacturer’s training protocol (5 times per day).

*This investigation suggests that the device may represent an innovative treatment for respiratory muscle strength training for select patients with dysphagia that is comfortable, easy to use and may confer higher compliance.*



## **TRISMUS BITES!**

### **THE TRISMUS PROJECT**

Trismus has a profound impact on swallowing and quality of life in head and neck cancer (HNCA) survivors. The incidence and factors associated with the development of trismus in HNCA, however, are not well defined. CVS clinician scientists sought to determine the incidence of trismus in patients treated for head and neck cancer and identify factors associated with trismus development. The identification of risk factors for trismus may lead to innovative preventive strategies.

The overall incidence of trismus in patients undergoing treatment for HNCA was 19%. The mean inter-incisor distance decreased from 44.2(+8.4) to 42.8 (+9.2) at 3 months ( $p < 0.05$ ). ***Twenty percent of patients met criteria for trismus 3 months after treatment.*** Patient demographics, Karnofsky performance score (KPS), radiation dose, tumor site and stage, pre-treatment dysphagia, and adherence to swallowing exercises displayed no association with the development of trismus.

***Nearly 1 in 5 patients undergoing therapy for HNCA will develop trismus in the early post-treatment period.*** The Trismus Project will continue with the mission to develop innovative preventive strategies.

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## **Center for Deglutition and Digestion (CDAD) Kicks Off**

***We are excited to announce the initiation of the UC Davis Center for Deglutition and Digestion.*** The interdisciplinary research center will unite specialists from Otolaryngology, Agricultural Engineering, Veterinary Medicine, Foregut Surgery, Food Sciences, and Nutrition. Dr. Gail Bornhorst will serve as the Center's Director, Dr. Peter Belafsky as the Medical



Director, and Dr. Stanley Marks as the Director of Veterinary Medicine. The Center's Laboratory will be housed at the core research facility of the Department of Otolaryngology in Davis, California. Initial research projects include developing novel medicinal food products to treat gastroesophageal reflux disease and obesity, evaluation of the association between liquid thickeners and pulmonary injury, expansion of Dr. Bornhorst's gastric simulator to the pharynx and esophagus, and development of an interdisciplinary training program in Deglutology and Digestion. ***The mission of the CDAD***

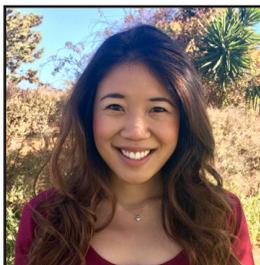
***initiative is to greatly advance the diagnosis and management of swallowing, nutritional, and digestive disease in our lifetime.***

**CVS WELCOMES NEW CLINICIANS****Stacy Holyfield, CCC-SLP, MS**

We were delighted to welcome Stacy onto our team. A native of Arizona, she joined us from Northern Utah Rehabilitation Hospital in Ogden, UT. She earned a BA in Music with Vocal Emphasis from Northern Arizona University and an MS in Clinical Speech Pathology. She began her career as an SLP in acute rehabilitation which provided opportunities to work in intensive contexts and witness remarkable therapeutic outcomes. Given her crooning background, she has had a lifelong passion for anything and everything to do with the voice. She “found her dream job” at UC Davis CVS, and we are lucky to have her. Stacy enjoys music, being outdoors and her puppy, Clementine.

**Tess Tavill, CCC-SLP, MS**

Tess completed her clinical fellowship at the UC Davis CVS in May and immediately joined our team full-time. A native of Sacramento, she earned a BA in Speech, Language and Hearing Sciences from University of Colorado, and completed her Masters at Idaho State University. She intends to expand her expertise in the care of trauma, neurologic and head & neck cancer patients, and is very passionate about voice restoration after total laryngectomy. She holds particular expertise in Lee-Silverman Voice Therapy and endoscopic “bioFEESback.” She is spearheading a research project evaluating the association between articulation deficits in head and neck cancer survivors and swallowing dysfunction. In her free time, Tess likes to travel, experiment with new recipes and spend time with friends and family, including her new two month old nephew, Jack.

**Amanda Khoe, CCC-SLP, MS**

Amanda earned a BS in Human Development from UC Davis. She then completed a Masters in Speech Language Pathology at the Teachers College of Columbia University. She returned to UC Davis to join our team full time in May. With abundant experience in acute and subacute environments, Amanda feels at home with medically-complex patients. She is passionate about caring for patients with sequelae of neurologic disorders including stroke, Parkinson Disease and traumatic brain injury. She is excited about the innovative research and creative therapeutic approaches being developed at the CVS. A native of California, Amanda enjoys sampling new restaurants, biking, baking and spending time with family and friends.



All of us have been impacted by dysphagia and its devastating consequences. Swallowing problems account for a large percentage of death in persons with ALS, advancing age, Parkinson's Disease, stroke, muscular dystrophy and head and neck cancer. We have dedicated our professional lives to improve the health and quality of life in persons affected by profound dysphagia. The status quo is not

acceptable. We must work together to do better. Through passion and innovation we will make a difference in the treatment of dysphagia in our lifetime. This is our mission.

Please join us in our **EAT NOW!** campaign and support dysphagia research. *Send your philanthropic donation payable to UC Regents to ...*

UC Davis EAT NOW!  
Center for Voice and Swallowing  
Attn: Sharon Schauer  
2521 Stockton Blvd #7200  
Sacramento, CA 95817

## Appointments

To schedule an appointment at the UC Davis Center for Voice and Swallowing please contact our CVS coordinator Samantha Kiely at 916-734-5629 or [skiely@ucdavis.edu](mailto:skiely@ucdavis.edu).

## Make a difference

**We need your help.** Much of our research is funded by philanthropic gifts from grateful patients. Your support will directly help the millions of individuals suffering from complex disorders of voice and swallowing worldwide. Join the movement of hope and help make a difference now. Please contact the Center for Voice and Swallowing Director of Development Sharon Schauer at 916-734-1053 or [sschauer@ucdavis.edu](mailto:sschauer@ucdavis.edu).

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