

Real-time, remote video helps Northwestern University train Speech Language Pathologists, and better treat patients with swallowing disorders

About Northwestern University:

Located in Evanston, IL (USA), **Northwestern** is one of the world’s leading private research and teaching universities. A deeply interdisciplinary academic innovator, Northwestern University is comprised of eleven undergraduate, graduate, and professional schools. Northwestern’s healthcare education units include the **Feinberg School of Medicine**, affiliated teaching hospital (**Northwestern Memorial Hospital**), the **School of Communication, Department of Communication Sciences and Disorders**, and its **Swallowing Cross-Systems Collaborative (SCSC)** – a state-of-the-art facility focused on research, diagnosis, and treatment of speech and language disorders.

The Problem:

Among communications disorders, one of the most challenging is **dysphagia** (also known as swallowing disorders). While dysphagia can occur at any age, it is more common among older adults and may be associated with pain and/or the inability to swallow.

According to the **Swallowing Disorder Foundation**, the prevalence of dysphagia may be as high as 22 percent of the U.S. population over 50 years of age, with between 300,000 and 600,000 Americans affected by neurogenic dysphagia annually.¹ Treatment of swallowing problems vary depending on signs, symptoms, and diagnosed causes (which include cancer, stroke, Parkinson’s disease, and trauma, and can often be complex).

Research published in ISDE journal *Diseases of the Esophagus* concluded dysphagia represents “a substantial health and cost burden on the U.S. healthcare system,”² given increases in hospital length of stay, inpatient costs, discharge to post-acute care facilities, and inpatient mortality associated with the disorder.

What was Needed:

Medical professionals who diagnose and treat swallowing and speech disorders are known as “**Speech Language Pathologists.**” SLPs undergo a rigorous training program (combining a two-year master’s degree curriculum, supervised clinical experiences, passing of a national certification exam, and completion of a year-long fellowship), before they are ready for independent practice.

The **CCC-SLP** (Certificate of Clinical Competence in Speech Language Pathology) of the **American Speech-Language Hearing Association** (ASHA.org) is an essential professional credential that serves as a mark of excellence for SLPs, and a standard licensing requirement in most states.

Through its hospital, med school, communication department, and other units, Northwestern is committed to standardizing dysphagia diagnosis and embracing technology to improve how the next generation of SLPs can learn, while assuring quality patient care.

OVERVIEW

The Need

Evaluating and treating swallowing disorders is challenging.

The ability to share real-time and recorded video from fluoroscopic imaging with clinicians, SLPs, and graduate students could help to improve diagnosis, and provide learning opportunities for clinicians in training.

The Solution

High resolution live video streams from hospitals to other locations enable tele-evaluation and telementoring for medical education, and remote collaboration between clinicians.

The Benefits

Seeing is believing.

Sharing live video from the patient’s bedside with experts located elsewhere helps practicing SLP-CCCs, and those in training to better observe, collaborate, learn, diagnose, and treat dysphagia.

Northwestern: Longtime Dysphagia Science Innovator

Northwestern's leadership in communications disorders dates to the 1970s, when it established what became the "gold standard" for dysphagia diagnosis: the **Modified Barium Swallow Study, (MBS)** through which patients swallow barium while the action is captured through real time X-ray imaging. While the **MBS** was a groundbreaking tool, a lack of standardization meant SLPs across the world might do this test in different ways, which meant no two tests were the same.

Resolving this and other dysphagia issues has long been of interest to **Bonnie Martin-Harris, PhD**, Northwestern professor since 2016, and founder of its **Swallowing Cross-Systems Collaborative (SCSC)**.

To give SLPs-in-training essential experience with patients, Northwestern developed a technology-assisted approach to provide students more hands-on opportunities throughout their education. Its program is grounded in a standardized approach to instruction, assessment, and reporting of physiologic swallowing impairment. Developed and validated by Dr. Martin-Harris over a 15-yr. period, the **MBSIMP (Modified Barium Swallow Impairment Profile)** lets students participate in practice and clinical assessments from MBS exams of real-world dysphagic patients, using advanced online tools and feedback.

Live Video Gives SLP Students and Clinicians a "Better View"

In addition to simulation cases, students also have frequent opportunities to observe MBS procedures conducted on actual patients in real-time. These synchronous sessions are facilitated by **TIMS Consultant** (TIMS Medical, Chelmsford, MA), an interactive video broadcast network that securely transmits live videofluoroscopic signals from radiology suites at Northwestern's Chicago hospital to the SCSC in Evanston.

Provision of live video imaging allows direct, simultaneous participation in procedures by expert clinicians & radiologists from remote locations—providing a platform for interprofessional collaboration on complex cases via real-time audio & video.

"In addition to enabling convenient remote consulting from my office at the university—this multi-party, interactive video and audio connection represents a telementoring platform that gives students many more observation hours, and valuable exposure to tele-evaluation in a conducive learning environment," says Martin-Harris.

Conclusion

Live, remote medical video and audio collaboration provides unprecedented benefits to students, clinicians, and patients. In the COVID-19 era, students' ability to remotely participate in live procedures and interactive telestrations, with real-time support and instruction is invaluable.

Martin-Harris described this in a 2020 [commencement address](#) saying: "You are **FIRST** to experience the introduction of novel clinical experiences through remote, interactive technology. **FIRST** to be involved in fast tracking the approval and implementation of telepractice methods for patients with dysphagia."



"Through its ability to allow remote clinicians and SLP students to join and observe swallowing studies in real-time via a live video stream, TIMS Consultant represents the modern embodiment of the time-honored 'See one, Do one, Teach one' method of medical education."

Prof. Bonnie Martin-Harris, Ph.D., CCC-SLP, BCS-S
Alice Gabrielle Twight Professor and Associate Dean
Northwestern University (Evanston, IL)

Sources:

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TIMS Medical - By Foresight Imaging
1 Executive Drive, Suite 202
Chelmsford, MA 01824 USA
W: www.tims.com P: (978) 458- 4624
E: info@tims.com Follow us on Twitter
at <https://twitter.com/TIMSMedical>

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