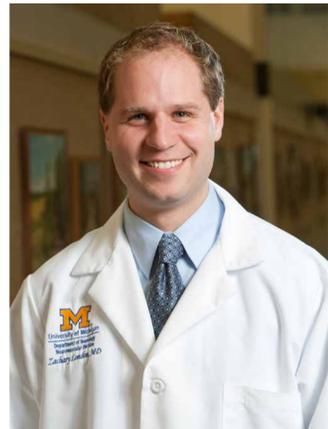




## University of Michigan Provost's Teaching Innovation Prize

2015 WINNER



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Jerry Isler Neuromuscular Fund.

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# Teaching Medical Reasoning with EMG Whiz

## Innovation Description

A web-based simulator, EMG Whiz challenges medical residents and fellows to plan efficient sequences of electromyography tests in order to diagnose nerve and muscle disorders. Training recommendations call for neurologists and physiatrists to perform and interpret 200 complete electrodiagnostic evaluations during their residencies or fellowships. Although hands-on, clinical experience enables trainees to become adept at making common diagnoses, trainees are unlikely to get enough practice with less commonly seen diseases to be able to identify them with confidence, let alone to do so efficiently.

EMG Whiz addresses these gaps in training and fosters the critical thinking skills needed to design and interpret EMG studies. From a library of 40 diagnoses, the software generates millions of realistic cases with a new clinical history for each patient and new nerve conduction values for each test ordered. Once a user stops collecting data and "solves" the case, the program provides feedback on both the adequacy and the efficiency of the testing strategy for ruling out competing diagnoses and ruling in an accurate diagnosis. EMG Whiz thus encourages thoughtfulness and discourages wasteful, "protocol-based" testing.

## Student Comments

EMG Whiz "uniquely teaches challenging neurological concepts in an approachable, original format."

"EMG Whiz highlights the reasoning skills inherent to electromyography. It teaches clinical medicine not by rote memorization or simple pattern recognition, but by highlighting decision-making and a dynamic, logical approach."

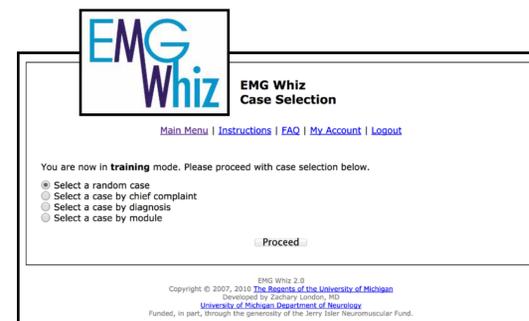
"Learning how to interpret electromyography results can be daunting for trainees. The approach differs based upon the patient's symptoms and must be adapted as the test[ing] progresses and more results become available."

"The program provides a self-paced, intuitive means to navigate through cases."

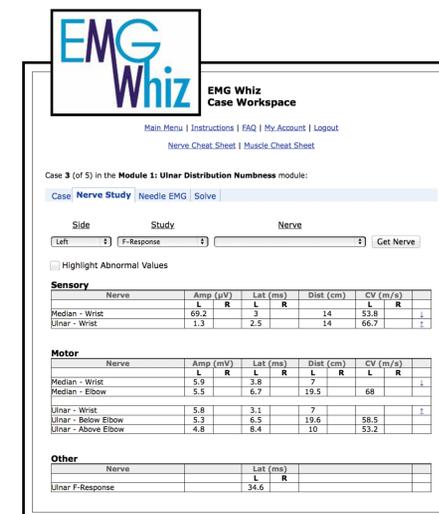
"EMG Whiz's innovation lies in its ability to teach the foundational logic of electromyography in a way that textbooks and journal articles cannot. The case-based approach duplicates the situations that physicians will encounter."

<http://www.emgwhiz.com>

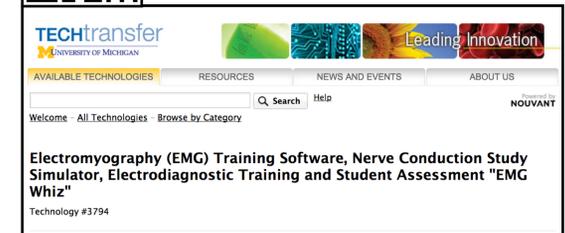
## Examples of Teaching Innovation



Learners can select cases at random, by diagnosis, by chief complaint, or as part of an entire module of related cases.



Trainees must decide which tests to order from a pool of more than 100 conventional nerve conduction studies.



The EMG Whiz website is accessed by thousands of users around the world each month. Licensing is managed by the U-M Office of Technology Transfer. <http://tinyurl.com/oh677po>