

# Otolaryngology for Internal Medicine: Increasing Exposure to Otolaryngology Using Computer Assisted Instruction

Arielle Thal & Philip Zapanta, MD, FACS

Division of Otolaryngology - Head and Neck Surgery, George Washington University Medical Center

## Introduction

Almost a quarter of all complaints seen in adult primary care practice and almost half of all complaints seen in pediatric primary care are otolaryngology (ENT) related<sup>1</sup>. In 2013, 47% of graduating U.S. medical students entered primary care fields (pediatrics, emergency medicine, internal medicine), where they will encounter these complaints<sup>2</sup>. However, there is currently no standardized curriculum for ENT during undergraduate medical education and there are barriers to increased specialty teaching during undergraduate medical education and residency training such as limitation of faculty time, limitation of learner's time, and decreased perception of relevance to general practice during undergraduate medical education. Due to these limitations, computer-assisted instruction has been suggested as a format for increased exposure to ENT. The benefits of computer-assisted instruction include availability, repetition, efficiency, and ability for use in self-assessment<sup>2</sup>.

## Objectives

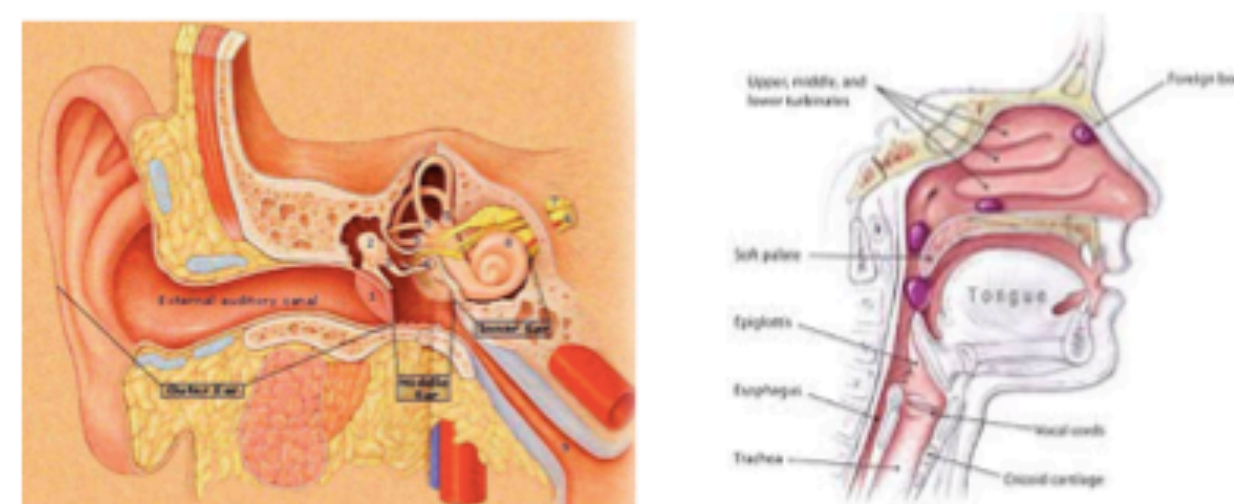
- To increase otolaryngology exposure during undergraduate medical education using computer based learning module.
- To assess the efficacy of this computer assisted instruction through feedback and scoring on post-module quiz following completion of module by internal medicine residents.

## Methods and Materials

A computer based learning module for teaching high yield otolaryngology topics was designed for incorporation into undergraduate medical education. The module was made using Camtasia Screencast technology. Information for module inclusion was based on previous studies that identified conditions relevant to primary care practice including hearing loss, otitis media, vertigo, epistaxis, rhinosinusitis, and head and neck cancer<sup>3</sup>. The module was formatted with 10 quiz questions introducing these topics with subsequent explanations and information according to clinical guidelines from the American Academy of Otolaryngology—Head and Neck Surgery. The module was sent to all internal medicine and primary care residents at GW (108 recipients) through the resident listserv. We chose to survey internal medicine residents instead of medical students as they had previously required a 2 hour ENT learning session, and it was presumed that there was room in the curriculum. Quiz scores and feedback were collected using Camtasia Techsmith reports. At 4 weeks following initial module distribution, a post-module quiz will be sent out to the same group. This quiz will further evaluate efficacy of the module by comparing scores from the in-module quiz to scores from the post-module quiz.

## Example of Module Format – Question & Topic #1

### Clinical Presentation of Common Otolaryngologic Conditions



Arielle Thal, George Washington University School of Medicine

### Scope & Objectives

- Many common otolaryngologic complaints can be addressed in the primary care clinic.
- The goal of this learning module is to address common chief complaints and to assess your comfort in treating these conditions.
- There will be 10 questions with explanations to follow.
- This module should take about 30 minutes of your time.
- [Please view in full screen and feel free to pause at any point!](#)

A previously healthy 25-year-old female comes to your office complaining of itching in the right ear for 1 week. She attempted to treat with a store bought irrigation system but noticed that after using the irrigation for a few days, the itching became worse. She notes that it is only in her right ear. On exam, the external ear canal is erythematous with noticeable swelling. Her temperature is 98.6°F and she has no history of diabetes mellitus. Which is the next best step in management of this patient?

- Warm compress and regular cleaning with cotton q-tips
- Oral quinolones
- Quinolone ear drops
- Oral amoxicillin

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### Acute Otitis Externa

- Acute otitis externa is also known as *swimmer's ear* or *tropical ear*
- It is generally unilateral and is associated with exposure of the ear canal to water or local trauma.
- Risk factors for AOE include a narrow external canal, eczema, seborrhea, psoriasis, and trauma from ear plugs, hearing aids or wax removal attempts

Infections of the External Ear  
Cummings Otolaryngology 6e 137, 2115-2122. e2  
Jason A Brant and Michael J. Rackenstein.

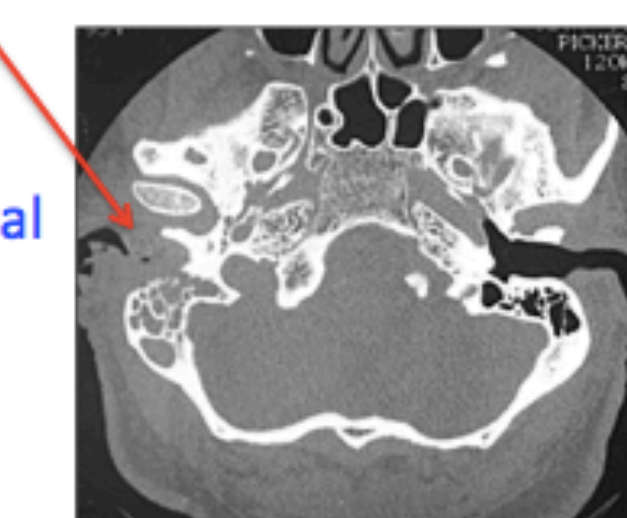
### Systemic vs. Topical Antibiotics for Acute Otitis Externa

- Topical therapy is the treatment of choice for AOE, because evidence shows that oral antibiotics are not effective. The amount of antibiotic delivered locally is orders of magnitude greater with topical administration vs oral administration.
- Commonly used topical antibiotics include fluoroquinolones or an aminoglycoside combined with an anti-pseudomonal. No single antibiotic regimen has been shown to be superior to others.
- The addition of a corticosteroid to topical antibiotics improves symptoms, as does acetic acid, although acetic acid in the absence of antibiotics is not effective for AOE.

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### Importance of diabetes status?

- Necrotizing otitis externa, is a severe infection of the external auditory canal, usually caused by Pseudomonas and most commonly seen in diabetics
- Infection can spread to the temporal bone causing osteomyelitis and to the base of the skull causing fatal complications  
— Arrow shows destruction of right temporal bone. Posterior wall of the external auditory canal is eroded. Opacification of mastoid air cells indicates infectious involvement.
- Treatment is daily debridement of external auditory canal, antipseudomonal ear drops and IV anti-pseudomonals



Staffel, J. Primary Care Otolaryngology. Third Edition, 2011. American Academy of Otolaryngology—Head and Neck Surgery Foundation.

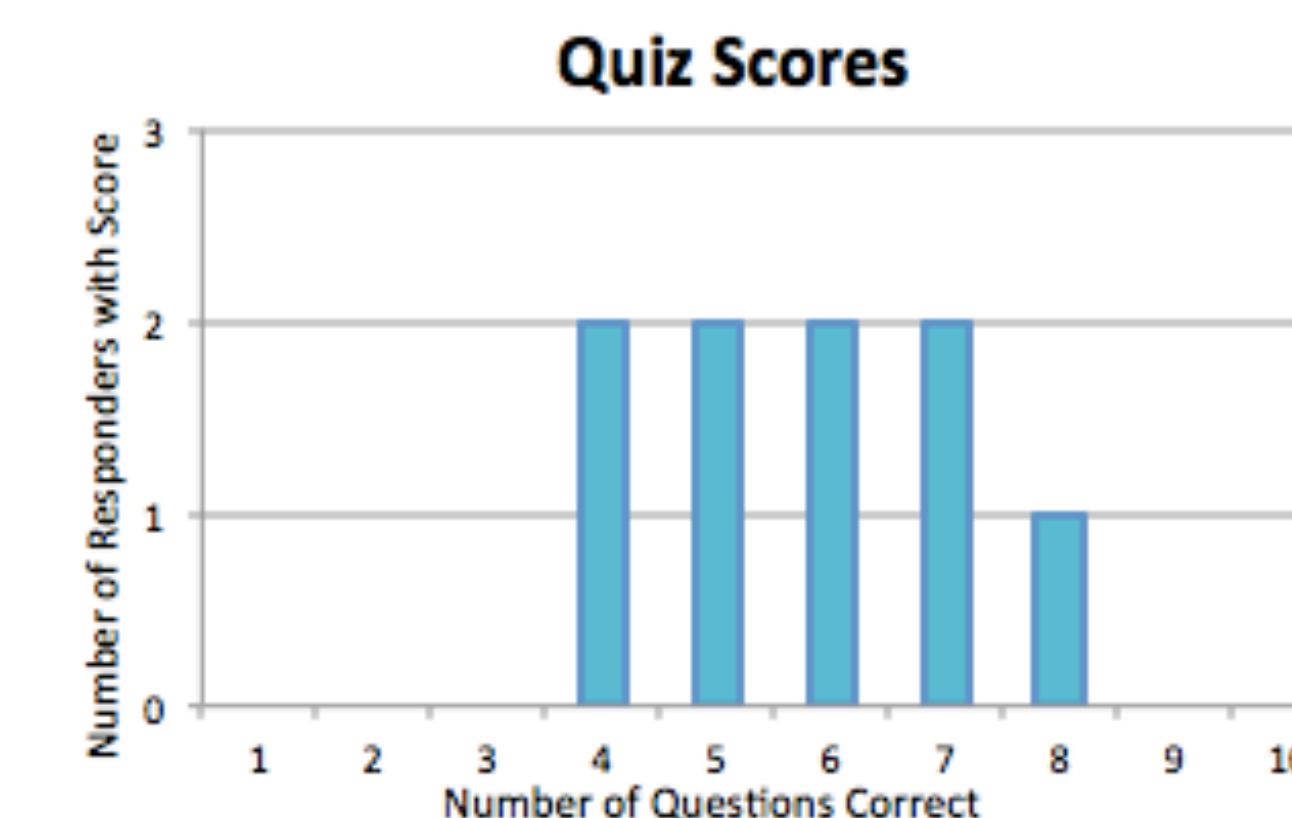
## Acknowledgements

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## Preliminary Data

3 weeks following module distribution:

- Total Views: 26 out of 108 recipients
- Complete Response: 9 of 108 recipients (8.3%)
- Mean Quiz Score: 57.5% (+/-1.39), Median: 60%



### Comments from Feedback Section:

- “effective for concepts taught. length was digestible”
- “nice module”
- “very helpful, especially with the questions”
- “very effective! Thank you”
- “Tough but thorough”
- “Helpful, thanks”

## Discussion

Preliminary results of this study with an average quiz score of 57.5% show that there is a need for increased otolaryngology exposure during general medical education. Feedback demonstrates that computer assisted instruction, like this module, could be a proper format for integration into the medical curriculum. Further evaluation with post-module quizzes will objectively assess the efficacy of this module as a learning tool.

A current limitation is the low response rate. Possible solutions to increase response rate include making the module and post-module quiz a mandatory component of the curriculum, increasing time for module completion, module distribution at time of in-service exams for residents to use as a study tool, and expanding distribution to medical students.

Computer assisted instruction, such as this module, may be an ideal platform to increase otolaryngology teaching. Further study to identify when and how to incorporate this into general medical education is needed.

## References

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