

## ATS Innovation in Medical Education Abstract

**Title:** The Pulmonary Nodule Curriculum: A Multimodal Learning Strategy for Pulmonary Fellows

**Authors:** Fahid Alghanim MD<sup>1</sup>, Hatoon Abbas MBBS<sup>1</sup>, Pooja Patel MD<sup>2</sup>, Janaki Deepak MBBS<sup>1</sup>

<sup>1</sup> Department of Medicine, Division of Pulmonary and Critical Care, University of Maryland School of Medicine, Baltimore, MD

<sup>2</sup> Department of Medicine, University of Maryland School of Medicine, Baltimore, MD

### **Introduction/Rationale:**

Historically, medical education has focused efforts on teaching content in a lecture format where an expert or authority in the field is passing along information to trainees or students in a passive manner. This method has been shown to be least favored by students or trainees. As technology started to integrate more effectively into medical education, more novel methods of trainee development have been implemented in graduate and post-graduate medical education. Multimodality learning strategies, specifically, VARK, which stands for visual, auditory, reading/writing, and kinesthetic, has been integrated successfully as a learning tool in school and undergraduate education. In this abstract we hope to introduce our multimodal learning curriculum dedicated to teaching post-graduate pulmonary fellows about pulmonary nodules.

### **Materials and Methods:**

In this prospective observational study, we looked at a cohort of pulmonary fellows that participated in our pulmonary nodule curriculum aimed at enhancing their education on this challenging topic. The curriculum has a variety of learning activities which includes an introductory didactic session with a pulmonary nodule expert that utilizes a flipped classroom method of teaching where fellows are given the material in advance to self-study and then gathered in class for higher order problem solving and thinking. Moreover, fellows were exposed to short videos on a variety of topics related to pulmonary nodules, lung cancer screening, and pulmonary nodule management to utilize the visual and auditory style of learning. Each fellow is also on a scheduled rotation where they are responsible for seeing patients in a pulmonary nodule clinic on a weekly basis which allows them to apply what they learnt into real life practice. To monitor the effectiveness of this curriculum, our fellows were requested to fill out a survey that gathers information on their demographic data and tests their baseline knowledge prior to and after the implementation of our curriculum.

### **Results:**

Twenty fellows have participated in the curriculum. Of those, around 15 fellows (75%) have filled out the pre- and post-curriculum surveys to assess demographic data, test knowledge, and gauge educational value of the pulmonary nodule curriculum. Of those who participated, 58.6% were men. Most of the fellows were between the ages of 31 and 35 (82.8%) and were Caucasian (51.7%). The fellows were from varied levels of training and subspecialty tracks including pulmonary-critical care, pulmonology, and interventional pulmonology. As far as knowledge assessment, all the fellows improved their performance on the knowledge portion of the survey after having participated in the pulmonary nodule curriculum as shown in Table 1. Also, 85.7% of the fellows have agreed that a multimodal approach to teaching pulmonary nodules is helpful.

### **Conclusions:**

A multimodal approach to pulmonary fellow education including flipped classroom didactics, educational videos, and immersive clinical experiences maybe a successful strategy at teaching basic concepts of pulmonary nodule evaluation and management. Different fellows may have different methods of learning and thus instituting various strategies of education such as VARK can be an important tool in curriculum development. Future studies and curricula should focus efforts on including other novel strategies and technologies including the development of infographics, twitter polls & threads, simulation experiences as well as mobile applications.