A PILOT STUDY OF ROBOTIC ASSISTED BRONCHOSCOPY AND CONE BEAM CT TRAINING CURRICULA FOR ADVANCED FELLOWSHIP TRAINEES

Alberto Revelo MD, Christian Ghattas MBCh, Jasleen Pannu MBBS, Enambir Josan MBBS,

Nicholas Pastis MD, The Ohio State University (OSU) Medical Center, Division of Pulmonary and Critical Care, Interventional Pulmonary Fellowship

INTRODUCTION:

Following recent FDA approval of two robotic bronchoscopy platforms, training programs struggle to train and certify pulmonary physicians in this novel procedure. In addition, many programs are coupling cone beam computed tomography (CBCT) with robotic bronchoscopy to improve the accuracy of the procedure. While trained in the interpretation of chest CT scans, pulmonary fellows lack training on acquisition of chest CT images. Since not all medical centers provide radiation technologists during bronchoscopy, advanced bronchoscopists also need to be familiar with CBCT use if incorporating it into the procedure. The purpose of this project is to validate a curriculum which may shorten the learning curve and enhance efficiency for robotic bronchoscopy/CBCT.

METHODS:

New Interventional Pulmonary Fellows will be pre- and post-tested on 15 critical steps of robotic bronchoscopy/CBCT. Four interventional pulmonologists credentialed in robotic bronchoscopy/CBCT also took the test. After a pre-test, fellows are required to complete an online robotic bronchoscopy training module (basic driving, advanced driving, airway driving, advanced airway driving, and touch screen controls), a basic fluoroscopy online module, and hands-on training sessions with a robotic bronchoscopy high fidelity simulator prior to assisting or using the robotic system. The following topics are covered: System Component Overview and Setup, “Shape-Sensing” Technology, Instrument Overview and Docking, Touchscreen and Controller Overview, Workflow demonstration, Emergency Procedures. Cone Beam CT competencies include patient positioning, image acquisition, workstation management, proper team communication, image interpretation and integration with robotic bronchoscopy, and troubleshooting. The trainee will first observe 10 procedure before performing 10 robotic assisted navigation procedures from start to finish with the attending physician’s presence. After completing this entire curriculum, fellows will be post-tested.

RESULTS:

The one interventional pulmonary (IP) fellow at OSU was pre-tested on the 15 critical steps and scored 2/15 (13%) correct. All four credentialed IP physicians scored 15/15 (100%) on the test. Following completion of the curriculum, the IP fellow scored 15/15 (100%).

CONCLUSIONS:

1. After completing a curriculum containing online didactics, simulation training, case observation and participation in 10 cases with real patients, an IP fellow demonstrated competence as measured by a test of key procedural steps.
2. The validity of this test on these key steps should be validated with a larger cohort of physicians with different levels of skill (novice, intermediate, expert) at different centers.

3. Interventional Pulmonology fellowship program should consider a formal curriculum for trainees on robotic bronchoscopy. Robotic bronchoscopy will likely replace older navigational technologies and thus future generations of advanced bronchoscopists and interventional pulmonologists will see the need for adequate training.
4. Reduction in length of procedure is another important outcome that could be measured before and after this training program.