



Fluoroscopy Protocols

SNIFF Test

Fluoro Time Target Limit-1.0

Scheduling and Prep:

- *There is no prep for this exam
- *Locate prior CXR or related prior
- *If no prior CXR available, for comparison to the SNIFF test; take a 2V CXR with the SNIFF test ACC#.

Room Prep:

- **Obtain surgical and cancer history**
- *Have the patient in the upright position if possible
- *Position an anatomical marker on the superior portion of the patient's chest area- do not allow marker to superimpose over the lung.
- *13mm Tablet- if your machine does not have built-in measuring Capabilities

Procedure:

*Inform the Radiologist of the patient's history and give them the option to be present during the procedure in order to observe the movement of the diaphragm. If the Radiologist at your site prefers not to be present during the exam, **take 4/sec Cine** of patient sniffing.

*With the image intensifier open completely, you should be able to include both diaphragms in an AP projection. If this is not possible, with your equipment, oblique the patient slightly to the left and then to the right. Obtain images in both oblique positions.

*Have the patient inhale **forcefully** through their nose, with their mouth closed and hold their breath. Take an AP image to include the diaphragms. If an entire hemi diaphragm exhibits a paradoxical **upward** motion greater than 2 cm, diaphragmatic paralysis is likely.

*Have the patient then inhale **forcefully** and **rapidly** through their nose with their mouth Closed. Observe the motion of the diaphragm. A sharp and brief downward motion in Both hemi diaphragms is the normal response when paralysis is absent.

*Have the patient exhale forcefully and take an AP image to include the diaphragms.

*Label all images with Scout, Inhale, Exhale, etc....

According to [Bryan F. Meyers, MD, FACS](#) and [Benjamin D. Kozower, MD](#) the sniff test is performed to confirm that the abnormal diaphragm excursion is the result of paralysis rather than of weakness. During this test, the patient inhales forcefully and rapidly through the nose with the mouth closed. A sharp and brief downward motion in both hemi diaphragms is the normal response when paralysis is absent. If an entire hemidiaphragm exhibits a paradoxical **upward** motion greater than 2 cm, however, diaphragmatic paralysis is likely.¹² The diagnosis of diaphragmatic paralysis may be difficult to make in patients with severe chronic obstructive pulmonary disease, in which normal hemi diaphragms move very little. The sniff test may also be inconclusive in weak, debilitated patients, who often are incapable of producing a forceful sniff.

References

[Bryan F. Meyers, MD, FACS](#)

Associate Professor, Department of Surgery
Washington University School of Medicine in St. Louis

[Benjamin D. Kozower, MD](#)

Thoracic Surgery Fellow
Washington University School of Medicine in St. Louis

Please refer to <http://www.acssurgery.com/acs/chapters/ch0406.htm>

For a tutorial about elevated hemi diaphragms, hemi diaphragmatic paralysis and the sniff test.

Revised: August 17, 2011



Reviewed and Revised March 15, 2019
Reviewed January 23, 2024