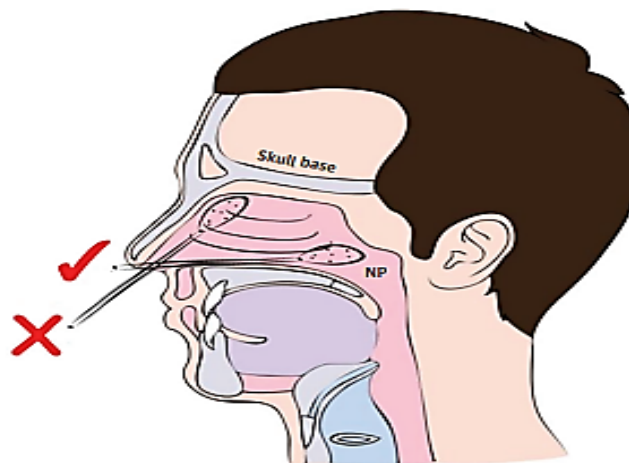


PRACTICE ALERT

Proper Positioning for Swabbing Nasopharyngeal Area Affects Reliability of COVID-19 Tests

Figure. Diagram of Nasal Anatomy Showing the Correct (✓) and Incorrect (X) Trajectory for a Swab Directed Into the Nasopharynx (NP)



The NP is back, not up.

The correct trajectory is along the floor of the nose in the direction back toward the ear for nasopharyngeal swab testing (Figure Above).

Source: JAMA Otolaryngol – Head & Neck Surg. September 17, 2020

As COVID-19 has reached pandemic status with over 6 million confirmed cases in the United States alone, widespread availability of diagnostic testing is critical in helping identify and control the emergence of this rapidly spreading and serious virus.

With the three main types of tests: molecular (also called PCR tests, viral RNA tests, nucleic acid tests) and antigen (diagnostic) and antibody (serological), molecular tests are considered to be the gold standard diagnostic test for SARS-CoV-2. The specific technique that's used is called reverse transcription polymerase chain reaction, or RT-PCR, where genetic material from a sample is copied and then compared to the genetic sequence of the virus that is being tested for. In a patient with a COVID-19 infection, genetic material from SARS-CoV-2, the virus that causes COVID-19, is generally detectable in upper and lower respiratory specimens (nasopharyngeal or sputum).¹

Nasopharyngeal molecular tests typically involve inserting a 6-inch long swab into the **back** of the nasal passage through one nostril and rotating the swab several times for 15 seconds. The swab should be angled to follow the floor of the nose, and the depth required to reach the nasopharynx is approximately 9 to 10 cm in adults. For many swabs, this means that almost the entire length is inserted into the nasal cavity, with only a small portion left to be held outside the nose.²

Poor technique in nasopharyngeal molecular testing may erroneously convert this test to a simple nasal swab with upwards of a 37% false negative rate.³ Frequently, and because this test is uncomfortable, a patient or the practitioner may retract prematurely before the swab reaches the correct location and is saturated with mucus. Even more concerning is the putting into practice by pharmacies in having patients self-administer swabs designed to reach the nasopharynx. Few laypersons can be expected to understand the depth and trajectory required to perform the test.

Inadequate nasopharyngeal swab collection may continue to lead to false-negative results. The rate of false-negative results in reverse transcriptase polymerase chain reaction testing is a great concern because it underestimates the prevalence of SARS-CoV-2 infection, gives a false sense of security to patients and the health care workers caring for them, and limits public health efforts in identifying and tracing the spread of the virus.² We hope highlighting that the nasopharynx is back, not up, can help limit false-negative results in testing for SARS-CoV-2 and other respiratory viruses.

To Implement Proper Testing and Positioning for Swabbing Nasopharyngeal Areas, NYSNA Recommends the Following:

- Special rooms should be established for nasopharyngeal swab sampling using air purification management standards, or collection sites should be erected outdoors.
- All healthcare settings that perform nasopharyngeal swab testing for SARS-CoV-2 should develop and implement training for the procurement of samples emphasizing that the nasopharynx is back and not up, and that the swab should be angled to follow the floor of the nose.²
- A diagram of the nasopharynx should be displayed in testing areas.
- All healthcare settings that perform nasopharyngeal swab testing for SARS-CoV-2 should wear maximum personal protective equipment (N95 (or higher level) masks, goggles, protective coveralls, double-layer latex gloves, and water-resistant shoe covers).⁴
- Collectors should strictly follow the protection procedures before the operation in the following order: hand disinfection → medical mask → disposable cap → goggles → protective coverall → shoe covers → gloves → full protection face mask → the second layer of gloves.⁴
- Collectors should change their PPE every 4 hours or when protective gears are contaminated with the patient's vomitus.
- Nurses should strictly follow the sterile practice procedures during swab sampling and change gloves between samplings in the following order to ensure "two gloves per person": hand disinfection → removal of the second layer of gloves → hand disinfection → removal of the first layer of gloves → hand disinfection → donning the first layer of gloves → hand disinfection → donning the second layer of gloves.⁴
- When collecting a nasal swab, a polyester swab with a plastic shaft swab should be carefully inserted into nasal meatus until reaching the nasal palate and stay for 15–30 sec, twist 3 times carefully and slowly and subsequently removed. Another polyester swab should be used for the other naris in the same manner.
- Self-administration of a nasopharyngeal swab should be discouraged.

Resources:

1. Billingsley, A. (September 23, 2020). The Latest in Coronavirus (COVID-19) Testing Methods and Availability. Retrieved from: <https://www.goodrx.com/blog/coronavirus-covid-19-testing-updates-methods-cost-availability/>.

2. Higgins, T.S., Wu, A.W., & Ting, J.Y. (September 17, 2020). SARS-CoV-2 Nasopharyngeal Swab Testing—False-Negative Results From a Pervasive Anatomical Misconception. *JAMA Otolaryngology–Head & Neck Surgery*. Retrieved from: <https://jamanetwork.com/journals/jamaotolaryngology/fullarticle/2770786>.
3. Shmerling, R.H. (August 10, 2020). Which test is best for COVID-19? Harvard Health Blog. Retrieved from <https://www.health.harvard.edu/blog/which-test-is-best-for-covid-19-2020081020734>.
4. Qian, Y., Zeng, T., Wang, H., Xu, M., Chen, J., Hu, N., Chen, D., & Liu, Y. (2020). Safety management of nasopharyngeal specimen collection from suspected cases of coronavirus disease 2019. *International journal of nursing sciences*, 7(2), 153–156. <https://doi.org/10.1016/j.ijnss.2020.03.012>.