Home Use vs Professional Use ATK for COVID-19 Test

Suchet Takdhada
Editor of Royal Thai Navy Medical Journal
Academic Affairs Division, Academic Affairs Service Center, Naval Medical Department,
Royal Thai Navy, Bangkok
Corresponding Author: suchet.takdhada@gmail.com

Antigen Test Kits, or ATK, nowadays, are the most familiar and frequently used in our daily lives. In my opinion, the most concerning aspect is the procedure that we use to do the test. We are always confused between the ATK that is indicated for "Home Use" and "Professional Use". We tend to do a different procedure and for that, we also get confused between the "Nasal Swab" and "Nasopharyngeal Swab".

Unlike the nasal swab, which is less invasive and more comfortable, the nasopharyngeal swab is considered more painful and uncomfortable. Normally, when we do the nasopharyngeal swab, we feel somehow very terrible because of the irritation along the nasal passage through the nasopharynx by the "Swab Stick". There were several cases of complications associated with nasopharyngeal swab procedure that have been reported. The more frequent the procedure is done, the more complications happen[1]. Figure 1 shows the normal anatomy of the nose and nasopharynx via CT scan.

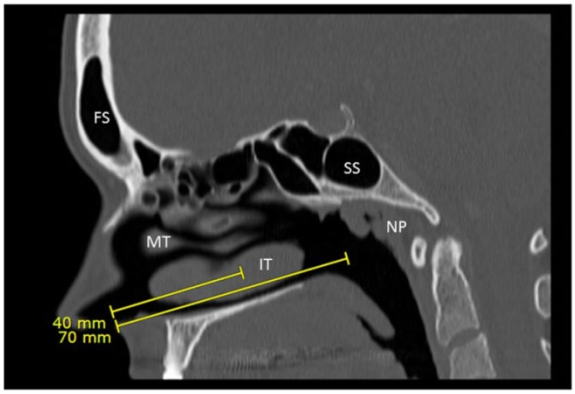

Figure 1. Sagittal CT view of nose and nasopharynx (50-year-old Caucasian female). Areas reached by recommended measured depth of insertion are demonstrated. FS - Frontal Sinus, MT - Middle Turbinate, IT - Inferior Turbinate, SS - Sphenoid Sinus, NP - Nasopharynx[2]

Types of Samples[3]

Different tests are authorized to be used with different types of samples. The most common sample types are:

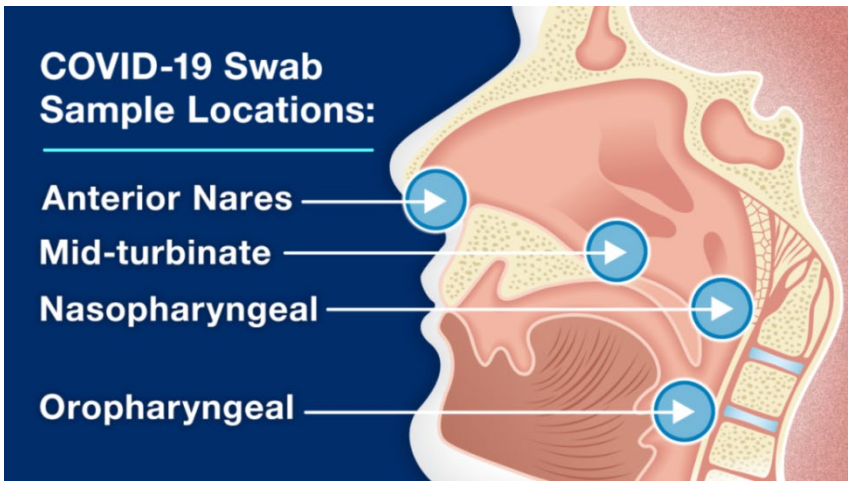

Figure 2: Swab samples use a swab (similar to a long Q-Tip) to collect a sample from the nose or throat. The types of samples include:

- Anterior Nares (Nasal) – take a sample from just inside the nostrils
- Mid-turbinate – take a sample from further up inside the nose
- Nasopharyngeal – take a sample from deep inside the nose, reaching the back of the throat, and should only be collected by a trained health care provider
- Oropharyngeal – take a sample from the middle part of the throat (pharynx) just beyond the mouth, and should only be collected by a trained health care provider

Saliva samples are collected by spitting into a tube rather than using a nose or throat swab.

Procedural References for Safe Nasopharyngeal Swab[1]

Anatomy

Sufficient orientation or simple reminders of the anatomical background related to the procedure is expected to lower the possibility of adverse events demonstrated in the previous section. The important anatomical landmarks to remember are cribriform plate, anterior wall of the sphenoid sinus, anterior nasal spine, and nasal floor (**Fig. 3A**). The angle of nasopharyngeal swab insertion into the nasal passage should be within 30°, a safe angle, from the nasal floor for safe testing (**Fig. 3A**). Upward swab insertion with angles greater than 30° not only results in inadequate sample collection but also can damage the skull base, including the cribriform plate and sphenoid, which can lead to CSF leakage. Clinicians could

predict the horizontal plane of the nasal floor and full depth of insertion by the line and length between the nostril and the external ear canal, respectively. Clinicians need to hold the swab in an appropriate way for safe insertion just above the nasal floor, which requires delicate pressing in the lower direction (**Fig. 3B and C**).[1]

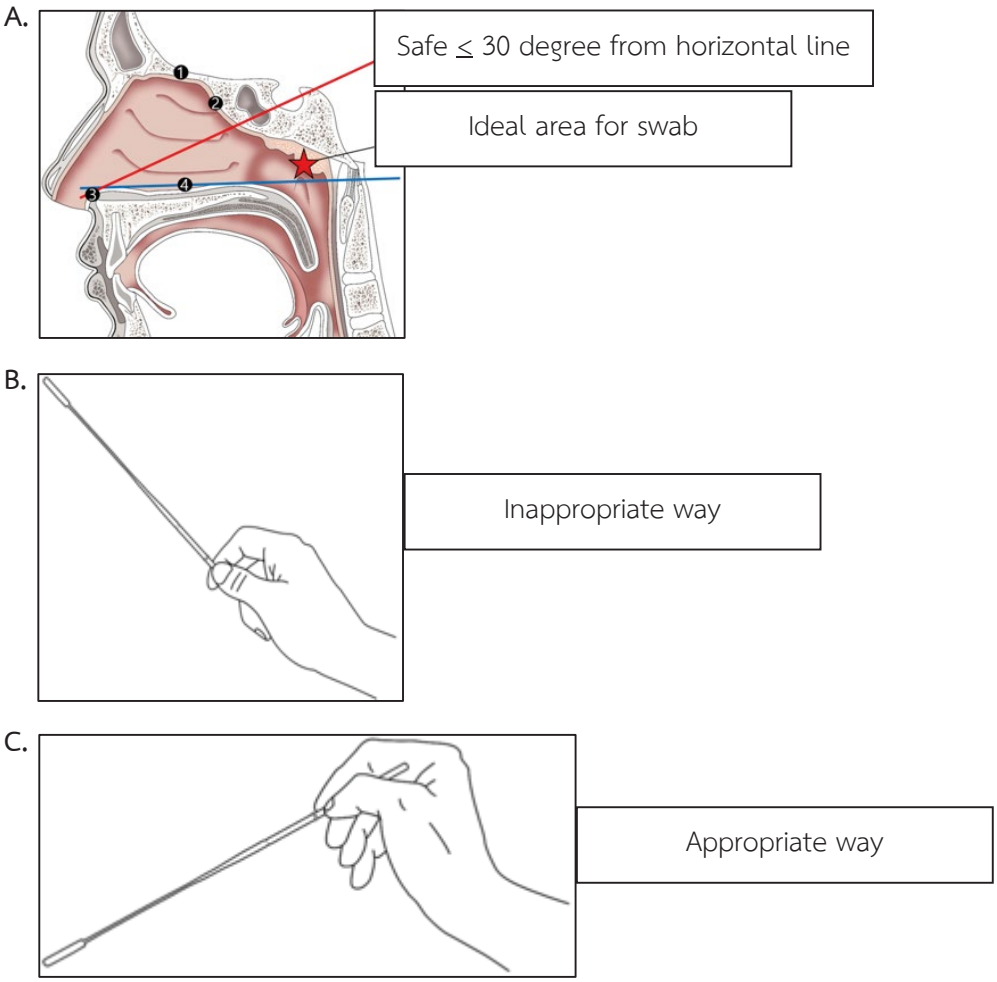

Figure 3. Basic (**A**) anatomical and (**B, C**) procedural background information for a safe nasopharyngeal swab. (**A**) The blue horizontal line starts from the anterior nasal spine and ends on the external auditory canal. Nasopharyngeal swabs should be performed within 30° from the blue to redline. Clinicians should be cautious not to (**B**) hold the swab inappropriately and are recommended to (**C**) grip the swab appropriately. (**B**) The inappropriate way to hold the swab causes difficulty to enter the safety zone within 30° after passing the anterior nasal spine. 1: cribriform plate; 2: anterior wall of sphenoid sinus; 3: anterior nasal spine; 4: nasal floor. Reproduced from the article of Mistry, et al.[4]

For this article, I would like to show the proper procedure when doing the swab test. Somehow, when we use the wrong position, the result might confuse us as undetermined result may cause us to become so upset and makes us panic. So before using any ATK, we should read the prescriptions carefully especially if it is indicated for "Home Use" or "Professional Use" and if the test requires saliva and/or nasal secretion as samples, too.[5]

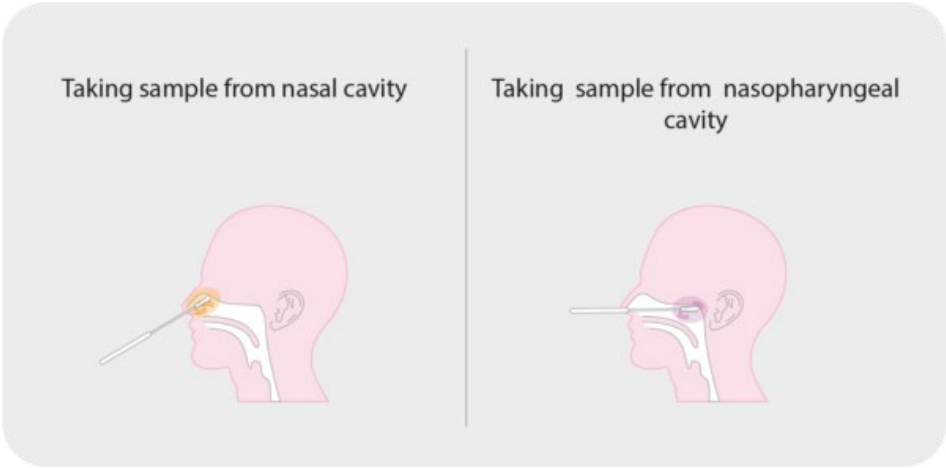

Figure 4. Differences between nasal swab and nasopharyngeal swab[4]

References

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