V. Recommendations *(as of 30 April 2021)*

A. HTAC recommendation for RT-PCR testing using NPS and OPS specimens:

RT-PCR testing using nasopharyngeal swab (NPS) and oropharyngeal swab (OPS) remains to be the most sensitive test for COVID-19. **The HTAC recommends the use of RT-PCR at or shortly after the onset of illness for symptomatic patients; or at least five (5) to seven (7) days after exposure to a suspected index case.** In Table 4, the recommended use cases, target population, and timing of testing are presented.

Table 4. Recommendations for RT-PCR testing using NPS and OPS specimens

Recommended Use Cases	Target Population	Timing of Testing
Diagnosis *DM 2020-0512: Diagnostic testing / Testing for diagnosis looks for presence of COVID-19 at the individual level and is performed when there is a particular reason to suspect that an individual may be infected (i.e. manifestation of symptoms or known history of exposure). Diagnostic testing intends to diagnose an infection in patients suspected of COVID-19 by their healthcare provider, such as in symptomatic individuals, individuals who have had recent exposure, and individuals who are in a high-risk group such as healthcare providers with known exposure. In these guidelines, this shall be applied to close contacts and suspect cases identified after symptoms-based screening.*	• Symptomatic • Asymptomatic with exposure	Per *DOH Department Memorandum (DM) 2020-0512* or the "*Omnibus Interim Guidelines on Prevention, Detection, Isolation, Treatment, and Reintegration Strategies for COVID-19*", it is best to conduct RT-PCR at or shortly after the onset of illness for symptomatic patients; or at least five (5) to seven (7) days after the exposure to a suspected index case.
Screening	• Asymptomatic individuals with or without known	The timing of testing using RT-PCR for screening is based on program needs.

DM 2020-0512: Screening testing / Testing for screening intends to identify infected individuals prior to development of symptoms or those infected individuals without signs or symptoms who may be contagious, so that measures can be taken to prevent them from infecting others. This includes broad screening of asymptomatic individuals without known exposure and then deciding on the next courses of action based on individual test results. In these guidelines, this shall be applied to travelers from high prevalence areas.	exposure, especially those travelling from high prevalence areas.	
Surveillance *DM 2020-0512: Surveillance testing / Testing for surveillance is primarily used to obtain information at a population level, rather than an individual level. Surveillance testing may be random sampling of a certain percentage of a specific population, to (1) monitor for increasing or decreasing prevalence, and (2) determine the effects of community interventions such as social distancing at the population level. In these guidelines, these shall be applied to frontliners and essential workers.*	• Random sample of the targeted population	The timing of the test using RT-PCR is based on the surveillance program.

B. HTAC recommendation on the use of saliva as an alternative specimen for RT-PCR testing:

The HTAC **recommends the use of saliva as an alternative specimen for RT-PCR testing for diagnosis, screening and surveillance as indicated in Table 4. The collection method, interpretation of results and recommended in-house verification procedures are described in Table 5.**

Table 5. Recommendation for the use of saliva as an alternative specimen for RT-PCR testing

Parameter	Specifications	Recommendations
Collection Method	Passive drool method using a wide-mouth sterile container with screw-cap or pop-op cover	Per DM 2021-0161, the following are the recommended method collection: i. Advise patients to avoid eating, drinking, brushing teeth, using mouthwash, and smoking for at least 30 minutes prior to sample collection. ii. Provide patients with a properly labeled, graduated, sterile, wide-mouth container, along with instructions on how to provide saliva sample 1. Advise patient to pool his/her saliva in the mouth. 2. Ask the patient to spit at least 2-3 mL of saliva to the container.
Interpretation of Results	Positive saliva test result - positive for SARS-CoV2 Negative saliva test result - negative for SARS-CoV2	Interpretation shall follow guidelines in *DM 2020-0512* or the "*Omnibus Interim Guidelines on Prevention, Detection, Isolation, Treatment, and Reintegration Strategies for COVID-19"*, where a confirmed case using a positive RT-PCR test must be isolated and triaged according to clinical status. A negative RT-PCR test may indicate absence of SARS-CoV-2 but does not rule out COVID-19. Per the US FDA Letter, *"Genetic Variants of SARS-CoV-2 May Lead to False Negative Results with Molecular Tests for Detection of SARS-CoV-2 - Letter to Clinical Laboratory Staff and Health Care Provider"* recommendations on the interpretation of results are as follows: Per US-FDA clinical laboratory staff and health care providers who use molecular tests for the detection of SARS-CoV-2 must be cognizant of the following:

		● Genetic variants of SARS-CoV-2 arise regularly, and false negative test results can occur. ● Increased prevalence of genetic variants less likely affects tests that use multiple genetic targets to determine a final result. In addition, clinical laboratory staff and health care providers who use molecular tests for the detection of SARS-CoV-2 must consider the following: ● Negative results in combination with clinical observations, patient history, and epidemiological information; and, ● Repeat testing with a different test (with different genetic targets) if COVID-19 is still suspected after receiving a negative test result.
In-house Verification procedures	Must follow in-house verification methods set by the RITM	Following DM 2021-0161, or "*Interim Guidelines on the use and administration of Saliva-based RT-PCR testing*", the HTAC recommends, in house verification by COVID-19 Laboratories adhering to the guidelines set by RITM. 1. The COVID-19 laboratories shall perform in-house verification of the new RT-PCR methods using the FDA registered RNA extraction kit and RT-PCR detection kit validated for saliva specimens. 2. The COVID-19 laboratories shall submit the saliva-based RT-PCR verification report to RITM. 3. RITM shall issue a certification to the COVID-19 laboratory for saliva-based RT-PCR testing. 4. RITM shall endorse to HFSRB the copy of the certification of COVID-19 laboratories capable of performing saliva-based RT-PCR testing. 5. HFSRB shall regularly provide a census of COVID-19 laboratories certified to perform saliva-based RT-PCR testing.

C. RT-PCR kits using NPS/OPS and Saliva as specimens must satisfy the following recommended minimum regulatory, technical, operational specifications set by HTAC:

In concordance with the Philippine FDA's requirements, **HTAC has set minimum regulatory, technical, operational specifications for RT-PCR for NPS/OPS and saliva specimens in Table 6**, including the recommended **clinical sensitivity of at least 95%** and **clinical specificity of at least 99%**.

Table 6. Recommended specifications for RT-PCR kits using NPS/OPS and saliva specimens

Parameter	HTAC specs for RT-PCR 2020	HTAC SPECS 27 APRIL 2021 (For NPS/OPS and Saliva unless otherwise specified)
OPERATIONAL REQUIREMENTS		
Regulatory Requirement	Must have a certificate of product registration (CPR) or emergency use authorization (EUA) from the FDA Philippines	Must have the appropriate regulatory authorization from the Philippine FDA stating the specific specimen sample
Validation	Must have been validated by an independent or a third-party reputable government or private research institution.	Must have been validated by an independent or a third-party reputable government or private research institution including: ● Research Institute for Tropical Medicine (RITM) ● US Food and Drug Administration (US-FDA) ● World Health Organization, Foundation for Innovative New Diagnostics (WHO-FIND) ● Therapeutic Goods Administration (TGA, Australia) ● Medicines and Healthcare products Regulatory Agency (MHRA, UK) ● Japan Pharmaceuticals and Medical Devices Agency ● *Other DOH-designated institutions for test kit validation recognized by RITM*

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<td>Cost</td>
<td>Must include all necessary accessories per test, including extraction reagents, consumables, & viral transport media.
Detailed breakdown of the cost must be provided by the supplier.

The ceiling cost is Php 1,800 per assay, excluding the cost of the PCR machine and the consumption of personal protective equipment (PPE).</td>
<td>Per DM 2021-0391, the cost of the RT-PCR test using NPS/OPS for public institutions is PHP 3,800. Testing laboratories accredited by PhilHealth may claim one of the following packages indicated in Table 7 adopted from PhilHealth Circular No. 2020-0017 or the “Benefit package for SARS-CoV2 testing using RT-PCR (Revision 1)”.

Table 7. Packages for SARS-CoV-2 testing by RT-PCR
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<tr><th>Package Code</th><th>Description*</th><th>Services covered by PhilHealth</th><th>Package Amount (PhP)</th></tr>
<tr><td>C19T1</td><td>All services and supplies for the testing are procured and provided by the testing laboratory</td><td>Complete services or minimum standards</td><td>3,409</td></tr>
<tr><td>C19T2</td><td>Test kits are donated to the testing laboratory</td><td>Screening/ clinical assessment/ specimen collection and handling, conduct of RT-PCR testing and analysis of results</td><td>2,077</td></tr>
<tr><td>C19T3</td><td>Test kits are donated to the testing laboratory; cost of running the laboratory and the RT-PCR machine for testing are subsidized by the</td><td>Screening/clinical assessment/ specimen collection and handling</td><td>901</td></tr>
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		<table><tr><td></td><td>*government*</td><td></td><td></td></tr></table> The cost of using **saliva specimens with RT-PCR** for public institutions should be significantly less than the *government price cap for* RT-PCR test kit using NPS/OPS.
PCR Machine Compatibility	Must be compatible with the existing machine/s of the testing facility, noting other prerequisites needed in order to operate such as appropriate containment and biosafety procedures.	Must be compatible with the existing machine/s of the testing facility, noting other prerequisites needed in order to operate such as appropriate containment and biosafety procedures.
Storage, expiration and stability	The expiration date must be no less than six (6) months from date of manufacture. Must pass the acceptance testing by RITM at the cost of the winning supplier.	COVID-19 Laboratories that will conduct PCR testing shall develop their standard operating procedures for the proper and safe collection, handling, storage, and testing. The storage must not be lower than -20 degrees Centigrade. The expiration date must be no less than one (1) year from date of manufacture.
Transportation	None	Must follow the transport temperature as stated in the manufacturer's instructions for use (IFU). The temperature may range from 2 to 8 degrees Centigrade.
Operating Temperature	The storage and working temperature must be -20 degrees Centigrade.	The operating temperature must not be lower than -20°C. Desirable for test kits to operate between 10°C and 35°C and able to withstand extremely high humidity. However, for best results, it is advised to follow the IFU that comes with the test kit.
Human resource	Must not require more than the basic competency of personnel equipped with skills on RT-PCR techniques and in-vitro diagnostic procedures & instrumentation.	**For NPS/OPS and Saliva Tests:** Only trained technical staff in biosafety and molecular detection of SARS-CoV-2 shall perform the test. **Additional instructions for saliva specimen collection:** Healthcare workers assigned shall provide instructions and directly observe patients on the proper collection of saliva specimens.

TECHNICAL REQUIREMENTS		
Analytical Sensitivity (Gene Targets)	Must have been tested for confirmatory gene (i.e., RdRP, ORF1ab, & N) & screening gene (i.e., E gene)	The testing should allow detection of two or more gene targets. (e.g., confirmatory gene- RdRP, ORF1ab, & N; screening gene - E gene). If the kit contains the S gene target, it should contain two or more other gene targets.
Analytical Specificity (Cross-Reactivity)	Must have been no significant cross-reactivities identified among the RT-PCR test kits. For cross-reactivity testing, must use at least both of the ff. organisms: Influenza A & Influenza B	Must have been no significant cross-reactivities identified among the RT-PCR test kits. For cross-reactivity testing, must use at least both of the ff. organisms: Influenza A & Influenza B
Clinical Sensitivity	Must have at least 99% sensitivity	COMMON: ≥95% sensitivity (FDA Memo 2021-009)
Clinical Specificity	Must have at least 99% specificity	COMMON: ≥99% sensitivity (FDA Memo 2021-009)
Processing Time	Must be six (6) hours or less (excluding repeat test and specimen transport)	PCR testing shall be performed, and results should be released within 48 hours of collection
Reference Standard	Must have used locally or internationally acceptable reference standards.	Refer to the RITM standard method for verification of RT-PCR for NPS/OPS and Saliva *(Interim Biosafety Guidelines for Laboratories Handling and Testing of SARS-CoV-2 [COVID-19] specimen*)
Sample Size Requirement for Validation	Must have a minimum sample size of 30 positive samples & 30 negative samples.	At least 30 PCR positive NPS/OPS samples and 30 PCR negative NPS/OPS

Additional Recommendation/s:

1. The HTAC recommends waste water surveillance using RT-PCR for further research, as fecal samples demonstrate high sensitivity.
2. The DOH should consider revising the current guidelines (e.g., *DM 2020-0512*) on the minimum target genes of RT-PCR considering available evidence and presence in the country of new variants.

The HTAC is actively on the watch for evidence as it is rapidly evolving, and shall update its recommendation when new information becomes available.