7. Affordability and viability

7.1. Resource Requirements

We found limited guidance documents or references relevant to the resource requirements of RAgTs internationally and locally, hence, we used information from the target product profile by the UK MHRA (2020b) and interim guidance by the WHO (2020). Based on the target profile document, RAgTs must have all materials needed to run the test, but in cases where some materials are not provided, these materials must still be procured by DOH and its accredited laboratories. Meanwhile, the WHO (2020) mentions that contents of the test kit may not necessarily include everything to perform and quality control the test. In terms of power requirements, the test must be operated without the need for a power source, but for tests that require an analyzer for reading the results, the equipment must be operated using a rechargeable and replaceable battery or through a standard power supply. In cases where additional training is needed for users such as healthcare professionals, this must not exceed half a day (MHRA, 2020b). In line with these requirements, the WHO (2020) mentions that the need for a reader or detection system will require additional training to personnel and additional infrastructure such as electricity. The UK MHRA (2020) discussed in their TPP that RAgTs should also have a quick turnaround, must be operable without the need for BSL 2 or 3 laboratory facilities, and in 15 to 30 ^{0}C temperature. On the other hand, the WHO (2020) emphasized that RAgTs must not be used if appropriate biosafety and infection control prevention measures such as PPE and ventilation are not in place. Because this information was sourced only from two international documents, it is important to note that some conditions or resource requirements may change depending on local conditions.

8. Recommendation

The HTAC reiterates that **RT-PCR remains the gold standard for diagnosis of COVID-19**, and would like to note that the following *interim recommendations on rapid antigen test are subject to change* pending new evidence.

The HTAC **does not recommend the use of rapid antigen tests** for indiscriminate use in mass screening (e.g., returning overseas Filipino workers (OFWs), return-to-work clearance, tourist clearance, land-stranded individuals (LSIs)) and COVID-19 diagnosis in individuals with low index of suspicion (i.e., asymptomatic and no history of exposure).

Rapid antigen tests, like other diagnostic tests, are used to initiate contact tracing, epidemiological surveillance, and clinical management. Rapid antigen tests have been found to be most useful during the acute phase of the disease when the viral load is high, that is, within five days after the onset of symptoms. Meanwhile, for asymptomatic contacts, rapid antigen tests can be used from four to 11 days after exposure even before symptoms develop. This is based on the WHO guidelines stating that antigen tests could be used one to three days before the onset of symptoms. Rapid antigen tests are currently recommended **by HTAC only for very specific purposes:**

- For targeted screening and diagnosis of suspect and probable cases of COVID-19 (i.e.., with high index of suspicion), meeting the clinical and/or epidemiologic criteria as currently defined by the WHO in the hospital or community settings;
- For testing of patients in the hospital setting, where the turnaround time is critical, to guide patient cohort management in order to minimize transmission of COVID 19 among healthcare workers and other patients. (Hospitals are high-risk settings among healthcare workers and patients.) Otherwise, use RT-PCR in case of elective procedures; and,
- For targeted screening and diagnosis of suspect and probable cases of COVID-19 in suspected outbreaks (as currently defined by the DOH – Epidemiology Bureau) of COVID-19 in remote settings, (e.g., geographically isolated areas), where RT-PCR is not immediately available.

Provided that rapid antigen tests satisfy the following recommended minimum regulatory, technical and **operational specifications** set by the HTAC, and **pass the acceptance testing** by RITM at the cost of the winning supplier**:**

Parameter	Requirement
Regulatory Requirement	Must have a certificate of product registration (CPR) or emergency authorization (EA) from the FDA Philippines
Test kit package content	It is desirable that rapid antigen test kits contain all materials and accessories necessary for the procedure.
Result output	Qualitative, result must be read visually or with a reader but must be operable using batteries
Human resource training	Less than half a day to no additional training needed for healthcare professionals to be able to optimize performance
Biosafety concerns	Can be done without the need for BSL 2 or 3 facilities, provided that there is evidence that the live virus was deactivated early in the process
Clinical Sensitivity	At least 80% sensitivity A useful assessment is the sensitivity of the test in patients with a rRT-PCR cycle threshold (Ct) below a specific value (e.g., 28 or 30)
Clinical Specificity	At least 97% specificity
Processing Time	Less than 2 hours from sample collection to result
Reference Standard	In-house laboratory RT-PCR test or if commercial RT-PCR test, must adhere to the specification stipulated in the HTAC Guidance Document on RT-PCR test kits
Sample Requirement in Validation Studies	Positive samples: minimum of 30 positive specimens Negative samples: 30 negative specimens Include details such as: • specimen type • specimen collection date • date of onset of symptoms (if present) • date of PCR testing • severity of symptoms (if known)

	• tests used to identify COVID19 patients, etc.
Requirement for Independent Validation	Must have been validated by an independent or a third-party reputable government or private research institution including but not limited to the following: • Research Institute for Tropical Medicine (RITM) • UP National Institutes of Health (NIH) • 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
Transport and Storage Requirements	The storage and working temperature can be 18 to 30 °C. It should be used in a controlled environment.
Shelf-Life	Shelf-life should not be shorter than twelve (12) months at the time of delivery
Calibration Requirement	If calibration is required, it can be done onsite
Cost of test kit	The cost of the RAgT kit should be significantly less than the cost of the RT-PCR test kit

Note: *The sensitivity and specificity thresholds using field validation results must be added to the technical requirements once clinical studies are available.*

The following are considered individuals with **high index of suspicion**:

- **Symptomatic and with history of exposure OR**
- **Symptomatic and with no history of exposure OR**
- **Asymptomatic and with history of exposure**

	WITH history of exposure	**WITHOUT history of exposure**
WITH symptoms	HIGH index of suspicion: Recommended for rapid antigen testing	HIGH index of suspicion: Recommended for rapid antigen testing
WITHOUT symptoms	HIGH index of suspicion: Recommended for rapid antigen testing *Applicable to guide patient cohort management to minimize transmission of COVID 19 to healthcare workers and other patients*	LOW index of suspicion: NOT recommended for rapid antigen testing

It is recommended that **individuals with positive rapid antigen test results (positive for COVID-19)** be isolated and managed as COVID-19 cases.**Individuals with a high index of suspicion and who tested negative using rapid antigen tests should be quarantined until they can be confirmed negative by RT-PCR results.** The confirmatory RT-PCR test for those who tested with negative rapid antigen test result should be done within two (2) days from the initial antigen test. **It is important to always correlate the test results with the overall clinical and epidemiological context (e.g., history of exposure).**

In areas where RT-PCR is not available to confirm a negative antigen test result, persons with negative antigen test results but with high index of suspicion for COVID-19 **should undergo the complete 14-day quarantine.**

Finally, the **HTAC recommends research** on the **value of repeated antigen testing** compared to confirmatory RT-PCR and to symptom-based screening, as well as the **value of rapid antigen tests in screening and diagnosing asymptomatic COVID-19 patients**. The studies should aim for validating the performance of the test on diverse groups of people and settings that represent the full spectrum of disease including repeated measures. To be useful, the studies should provide proof of improvement of test performance when applied in clinical settings and field situations or at a minimum simulation models.

Other overarching recommendations of the HTAC are as follows:

- Publicize standards on diagnostic performance to address the observed wide variability of performance in all COVID-19 testing kits in the market
- Strengthen system for monitoring and evaluation of compliance of manufacturers to regulatory standards and post-marketing requirements. Departmental constraints must be addressed to enable strict compliance and to add teeth to implementation.

9. References

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