SAHPRA
South African Health Products Regulatory Authority

CSIR Campus
Building 10F
Meiring Naudé Road
Brummeria
Pretoria

Communication to Stakeholders 20 April 2020

MD007: Specification criteria for COVID-19 serological test kits

BACKGROUND

1. Initial specifications for serological test kits have been published by the Medicines and Healthcare products Regulatory Authority (MHRA)[1] based on current information.
2. SAHPRA has adopted the MHRA specification criteria for serology/antibody point of care test (POCT) only.
3. These specifications are subject to review and may need to be updated at short notice.
4. This is a specification of the minimally (and some preferred options) clinically acceptable specifications for POCT tests to be made and/or used in the South Africa during the current COVID-19 pandemic caused by SARS-CoV-2 virus.
5. It sets out the clinical requirements based on the consensus of what is 'minimally acceptable' performance in the opinion of the South African IVD industry, healthcare professionals and medical device regulators given the emergency situation.
6. A test kit with lower specifications than this is likely to provide no clinical benefit and might lead to increased harm, which would be unacceptable.
7. Definitions:

Acceptable:	Defines the minimum acceptable specification
Desired:	Highly desirable features of considerable benefit. As time is of the essence if omitting one of these features significantly accelerates development and production it should be considered
Point of care test	An in vitro diagnostic medical device intended to be used by a healthcare professional outside of a laboratory in primary or secondary care environments

SPECIFICATIONS FOR SEROLOGICAL TEST KITS

8. Specifications are subject to review and can be updated.

Specification criteria for serology/antibody point of care test (POCT)
These are initial specifications based on current information. These specifications are subject to review and may need to be updated at short notice.

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/878659/Specifications_for_COVID-19_tests_and_testing_kits.pdf. Accessed April 9, 2020

Specification criteria for serology/antibody point of care test (POCT)		
Key Features	**Desired**	**Acceptable**
Priority Features		
Preferred product profile	Detection of at least two antibodies (Ab), IgG, IgM, IgA (antibody-based) or virus particle (antigen-based) Should not cross-react with seasonal or non-SARS-CoV-2 viruses.	
Target Population The person providing the sample to be tested	People who need to know that they are immune to SARS CoV. People may have recovered from suspected or confirmed SARS CoV 2 infection or they may have previously developed an asymptomatic infection.	
Target user setting The person operating the test kit	Health care professionals	Health care professionals
Clinical sensitivity [a] (false negatives – telling someone they haven't had the infection when they have)	Greater than 85 % (within 95 % confidence intervals)	Greater than 85 % (within 95 % confidence intervals)
Clinical specificity (false positives - telling someone they have had the infection when they haven't)	Greater than 98% (within 95% confidence intervals) for IgG between 14 and 20 days from appearance of first symptoms	Greater than 98% (within 95% confidence intervals) for IgG between 14 and 20 days from appearance of first symptoms
Analytical specificity[b] (interferents and cross reactivity)	No cross reactivity with other coronaviruses	No cross reactivity with other coronaviruses
Sample type	Capillary whole blood from fingerstick sample OR Venous blood, serum or plasma	Capillary whole blood from fingerstick sample OR Venous blood, serum or plasma
Available Pack Size	Single/multiple packs	Single/multiple packs
Test format A single use disposable, rapid diagnostic test housed in a test cassette	Double Ab lines on single cassette.	Separate strips dual cassette, or pair of cassettes clearly labelled
Test Accessories	Pack includes all accessories needed for taking sample and its application to test	Accessories are routinely available in healthcare institution environment.
Regulatory Status	Originating approval and evidence of use in jurisdictions recognised by SAHPRA	Originating approval and evidence of use in jurisdictions recognised by SAHPRA

Test Procedure		
Number of steps to be performed by operator (incubation steps) [c]	No more than four steps For example ▪ lance ▪ apply blood ▪ apply buffer ▪ read	No more than five steps
Need for operator to transfer a precise volume of sample or reagents	No	Acceptable if robust transfer device is provided with the test device and if variation does not affect the test results
Requirement to add reagents e.g. sample diluent / buffer	No	Diluent provided in dropper bottle
Biosafety	No biosafety should be needed in addition to Personal Protective Equipment	No additional biosafety should be needed in addition to Personal Protective Equipment
Need for operator to transfer a precise volume of sample	No	No
Time to result	No more than 5 minutes	No more than 20 minutes
Internal control	Included, procedural control detecting the capability of the assay	Included, procedural control detecting the capability of the assay
Sample preparation Need to process sample prior to performing the test	No more than 15 minutes None or fully integrated	No more than 15 minutes None or fully integrated
Invalid rate	No more than 0.1%	No more than 1%

Operational characteristics		
Operating conditions	5 - 30°C 80% relative humidity	5 – 30°C 70% relative humidity
Reagent storage (shelf life stability)	12 months at 2- 35°C No cold chain require	12 months at 2- 35°C No cold chain require
In use stability	More than 1 hour after opening of an individual pouch	More than 30 minutes after opening of an individual pouch
Reagents reconstitution Need to prepare the reagents prior utilization	All reagents provided and ready to use	All liquids, including water, already in kit

Operational characteristics		
End point stability (time window during which signal remains valid)	Up to 15 minutes	Up to 25 minutes
Reader to reader variation	More than 95% of readers should detect true positive results near the limit of detection	More than 95% of readers should detect true positive results near the limit of detection
Volume of sample	Single drop for finger-prick tests	No more than two drops for finger-prick tests
Disposal requirements	None, device and accessories should be disposed in standard biological waste containers, no glassware Or be biodegradable or combustible.	None, device and accessories should be disposed in standard biological waste containers
Kit presentation (if not single format)	▪ 10 Test kit ▪ Test components individually packed ▪ Accessories not too small to be used with regular examination gloves ▪ Include all required components and accessories to perform the test	▪ 5 test kit ▪ Test components individually packed ▪ Accessories not too small to be used with regular examination gloves ▪ List components required but not provided
Training needs Time dedicated to training session for end users	None Job aid included in test kit	Minimal
Power Requirements	None required	None required
Need for Calibration/ maintenance/spare parts	None	None should be require
Instructions for Use	▪ In line with Medical Device Regulation 24 requirements ▪ Simple interpretation by lay person with pictorials to aid sampling and results interpretation and what to do with the test if the control fails	▪ In line with Medical Device Regulation 24 requirements ▪ Simple interpretation by lay person with pictorials to aid sampling and results interpretation and what to do with the test if the control fails

Operational characteristics		
	▪ Clear reading time and Indications for different ranges of intensity/ concentration of target antigen/antibody ▪ Clear warnings of limitations for use including expected performance characteristic ▪ Paper or electronic	▪ Clear reading time and Indications for different ranges of intensity/ concentration of target antigen/antibody ▪ Clear warnings of limitations for use including expected performance characteristic ▪ Paper or electronic
Manufacturing environment	Conforms to ISO 13485:2016	Conforms to ISO 13485:2016
Lead time for production	1 month maximum	No more than 3 months

[a] Confirmation tests could be molecular PCR test for SARS CoV 2 virus using validated laboratory test on nasopharyngeal specimens

[b] Assessment of cross reactivity with other pathogens (pre-pandemic samples, other coronoavirus, SARS CoV 1, EBV, RF)

High priority organisms likely in the circulating area for example:

- Adenovirus (e.g. C1 Ad. 71)
- Human Metapneumovirus (hMPV)
- Parainfluenza virus 1-4
- Influenza A & B
- Enterovirus (e.g. EV68)
- Respiratory syncytial virus
- Rhinovirus
- Chlamydia pneumonia
- Haemophilus influenza
- Legionella pneumophila
- Mycobacterium tuberculosis
- Streptococcus pneumonia
- Streptococcus pyogenes
- Bordetella pertussis
- Mycoplasma pneumonia
- Pneumocystis jirovecii (PJP)

[c] Steps needed by operator e.g. preparation of reagents, lancing of finger for blood sample, adding sample to test cartridge, incubation time before reading.

DR B SEMETE-MAKOKOTLELA

CHIEF EXECUTIVE OFFICER OF SAHPRA

09 APRIL 2020