**For in vitro diagnostic use only**
**For OTC use at Home and other non-laboratory sites**

**For the most up to date information on COVID-19, please visit: www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection.html**

# COVCLEAR™ SARS-COV-2 (COVID-19) RAPID ANTIGEN TEST

## INTENDED USE

The CovClear™ COVID-19 Rapid Antigen Test is a lateral flow immunochromatographic assay intended for the qualitative detection of the nucleocapsid protein antigen from SARS-CoV-2 in nasal swab specimens that are self-collected by an individual 18 or older or are collected by an adult from an individual aged 2 years of age and older. This test is intended for use in individuals with or without symptoms or other epidemiological reasons to suspect a COVID-19 infection.
Persons who test positive with the CovClear™ COVID-19 Rapid Antigen Test should seek follow up care with their physician or healthcare provider as additional testing and public health reporting may be necessary in accordance with local, regional and federal requirements. Positive results do not rule out bacterial infection or co-infection with other viruses. Persons who test negative and continue to experience COVID-19 like symptoms of fever, cough and/or shortness of breath may still have SARS-CoV-2 infection and should seek follow up care with their physician or healthcare provider.
The CovClear COVID-19 Rapid Antigen Test is intended for over-the-counter use at home and other non-laboratory sites.

## PRINCIPLES OF THE TEST

The CovClear™ COVID-19 Rapid Antigen Test is a lateral flow immunochromatographic assay for the detection of extracted nucleocapsid protein antigens specific to SARS-CoV-2 in nasal swab specimens directly collected.
The CovClear™ COVID-19 Rapid Antigen Test is comprised of five components: polyester swab, lateral flow test strip, polypropylene vials, locking caps, and chase buffer solution. Each test strip contains a nitrocellulose membrane coated with antibodies against the SARS-CoV-2 nucleocapsid protein at the test line. A green-colored line will appear at the test line in the presence of the SARS-CoV-2 nucleocapsid protein. The nitrocellulose membrane is also coated with a printed control line that will appear as a 'blue' line until the test strip has been exposed to the swab sample where it will then appear 'red.' This color change from 'blue' to 'red' will indicate that the test was run successfully.
Nasal swabs require a sample preparation step in which the sample is eluted from the swab and into the chase buffer solution. The CovClear™ COVID-19 Rapid Antigen Test strip is then placed into the chase buffer solution. When the swab sample migrates into the test strip the gold nanoparticles labeled with anti-SARS-CoV-2 antibodies will bind the SARS-CoV-2 viral antigens to form an antibody-antigen immune complex. The immune complex is then captured by the test line on the nitrocellulose membrane as it migrates through the strip. Test results are interpreted at 20 minutes. The presence of two-colored lines, red at the control line and green at the test line, indicates a COVID-19 positive sample. The presence of one red colored line indicates a COVID-19 negative sample. A blue colored line or no line at 20 minutes after running the assay indicates an invalid test.

## COVID-19 INFORMATION

According to the United States Center for Disease Control (CDC), coronavirus disease 2019, abbreviated COVID-19, is a dangerous disease caused by a virus discovered in December 2019 in Wuhan, China. COVID-19 most often causes respiratory symptoms that can feel much like a cold, a flue, or pneumonia, but COVID-19 can also harm other parts of the body. Most people who catch COVID-19 have mild symptoms, but some people become severely ill. Older adults and people who have certain underlying medical conditions are at an increased risk of severe illness from COVID-19. For the most up to date information on COVID-19, please visit: www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection.html.

## WARNINGS AND PRECAUTIONS

- For in vitro diagnostic use only.
- This test has been authorized only for the detection of proteins from SARS-CoV-2, not for any other viruses or pathogens. This test has not been evaluated to determine its ability to distinguish between SARS-CoV and SARS-CoV-2.
- Immediately use after removing the test strip from packaging.
- In order to obtain accurate results, the test must follow this package insert.
- Do not interpret the test result before or after 20 minutes of starting the test.
- Do not use if the test device package or its contents are damaged.
- Do not use the kit contents beyond the expiration date.
- Do not eat, drink, or smoke in the area where the specimens and kit contents are handled.
- Use appropriate precautions in the collection, handling, storage, and disposal of samples and used kit contents.
- If chase buffer contacts the skin or eye, flush with copious amounts of water.
- Handle all specimens as though they contain infectious agents.
- Observe normal precautions against microbiological hazards and proper disposal of specimens.
- Do not interchange kit contents from different lots.
- Do not re-use any contents in the kit as they are single-use only.

## REAGENTS AND MATERIALS PROVIDED

Materials Provided

| KIT COMPONENT | AMOUNT PER TEST |
|---|---|
| Lateral Flow Assay Strip | 1 |
| Chase Buffer Ampule | 1 |
| Vial | 1 |
| Locking Cap | 1 |
| Individually Wrapped Swab | 1 |
| Instructions for Use | 1 |

Materials not provided with your test: Timer

## STORAGE AND STABILITY

The reagents and materials in the CovClear™ COVID-19 Rapid Antigen Test are stable until the expiration date printed on the packaging. Do not use beyond the expiration date. Store at 15°C to 30°C (60°F to 86F) sealed.

## SPECIMEN COLLECTION AND HANDLING

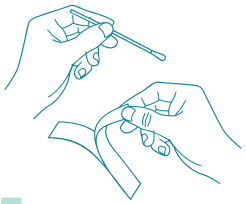
The CovClear™ COVID-19 Rapid Antigen Test only uses a direct nasal swab specimen. Only use the swab provided in the kit. It is essential that correct specimen collection and preparation methods be followed.

## LOWER NOSTRIL SWAB SAMPLE COLLECTION

Procedural Notes:

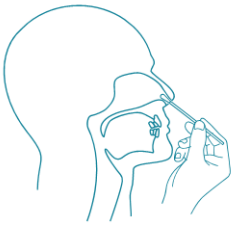
- Process the test sample immediately after collection.
- Use only provided nasal swab for specimen collection.
- Do not touch the tip (specimen collection area) of the swab.
- Collect samples as soon as possible after the onset of symptoms.

## DIRECT SWAB TEST PROCEDURE



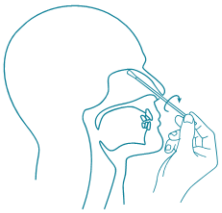
1

Remove a swab from the pouch.



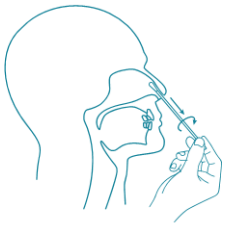
2

Place the dry swab into one nostril until it reaches resistance.



3

Slowly rotate the swab 7 times over the inside surface of the nostril.



4

Slowly remove the swab from the nostril while still rotating.

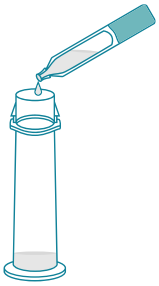
Repeat steps 2-4 on other nostril using the same swab.

## TEST PROCEDURE

For this test to work properly, read the instructions fully before starting the test and watch the instructional video (www.CovClearTest.com).

Procedural Notes:

- The test kit should be at room temperature (15-30°C) prior to use.
- Remove the CovClear™ COVID-19 Rapid Antigen Test strip, vial and locking cap, swab, chase buffer ampules from its kit immediately before testing.
- The CovClear™ COVID-19 Rapid Antigen Test kit IS INTENDED to be used only with a direct nasal swab specimen.
- The CovClear™ COVID-19 Rapid Antigen Test kit IS NOT INTENDED for testing other liquid samples such as nasal wash or aspirate samples as results can be compromised by over dilution.



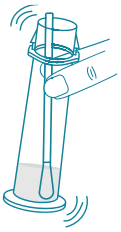
1

Pour entire buffer solution ampule into empty vial

2

Following the Lower Nostril Sample Collection Procedure, insert dry swab into one nostril until you meet resistance. Swirl 7 times.

Repeat with the same swab in other nostril.

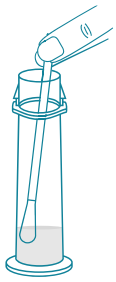


3

Place swab into prepared vial with buffer solution.

Slightly swirl the vial and swab for 30 seconds.

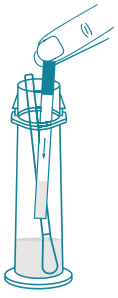
**NOTE**: DO NOT place the cap on the vial. DO NOT REMOVE SWAB.



4

Press tip against side of vial to squeeze liquid from swab for 10 seconds. Then place swab back into the buffer solution.

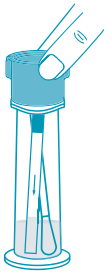
**NOTE**: DO NOT REMOVE SWAB



5

Place new test strip, arrow pointing down, into vial with the swab.

**NOTE**: Touch test strip on the colored end only.



6

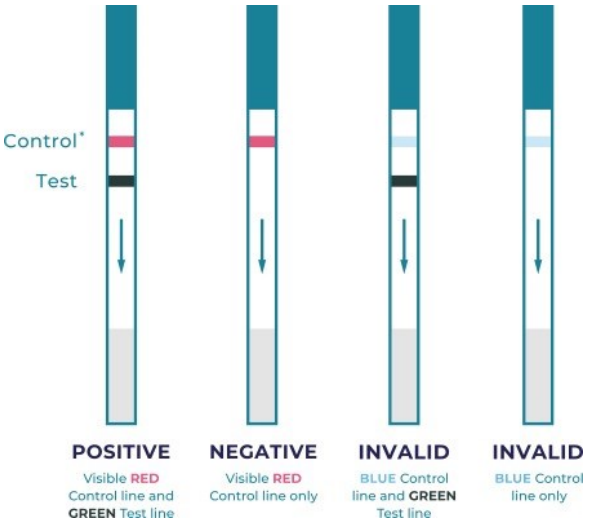
Place cap securely onto the vial with the test strip and swab inside.

**NOTE:** Cap will permanently lock in place. Do not tip vial over as this will invalidate the test.

**READ RESULTS AT 20 MINUTES.**

Read results through the vial. Do not remove test strip from vial.

## INTERPRETATION OF RESULTS




**NOTE**: The test results should be read and interpreted 20 minutes after the sample application and the reading and interpretation of the results should not exceed 20 minutes. The test results should not be interpreted using any instruments.

**NOTE**: Before use, a blue control line will be visible. It will transition to red when a valid test is performed.

**NOTE**: The color intensity in the test line (i.e. green-colored line) will vary depending on the amount of SARS-CoV-2 nucleocapsid protein antigen present in the sample. Any faint colored line in the test region should be considered as positive.

**POSITIVE**: Two distinct colored lines appear: One red-colored line representing the control line and one green-colored line representing COVID-19 positive result.

**NEGATIVE**: One red-colored line indicates a negative result.

**INVALID**: If the red-colored line is not visible, the result is invalid. If the test Is Invalid, a new test should be performed with a new sample collection.

Persons who test positive with the CovClear™ COVID-19 Rapid Antigen Test should seek follow-up care with their physician or healthcare provider as additional testing and public health reporting may be necessary. Positive results do not rule out bacterial infection or co-infection with other viruses. Persons who test negative and continue to experience COVID-19 like symptoms of fever, cough and/or shortness of breath may still have SARS-CoV-2 infection and should seek follow-up care with their physician or healthcare provider.

## LIMITATIONS

- Failure to follow the instructions for use may adversely affect test performance and/or invalidate the test result.
- If the differentiation of specific SARS viruses and strains is needed, additional testing, in consultation with state or local public health departments, is required.
- Results from antigen testing should not be used as the sole basis to diagnose or exclude SARS-CoV-2 infection or to determine infection status.
- This test will indicate the presence of SARS-CoV-2 nucleocapsid protein antigen in the specimen from both viable and non-viable SARS-CoV-2 virus. Test performance depends on the amount of virus (antigen) in the sample and may or may not correlate with viral culture results performed on the same sample.
- The detection of SARS-CoV-2 nucleocapsid antigen is dependent upon proper specimen collection, handling, storage, and preparation. Failure to observe proper procedures in any one of these steps can lead to incorrect results.
- Results from the device should be correlated with the clinical history, epidemiological data and other data available.
- This device has been evaluated for use with human specimen material only.
- False-negative results may occur if the concentration of the target antigen in the clinical specimen is below the detection limits of the device.
- This test cannot rule out diseases caused by other bacterial or viral pathogens.
- There is a higher chance of false negative results with home use tests than with laboratory-based molecular tests. This means that there is a higher chance this test will give you a negative result when you have COVID-19.
- The performance of this device has not been assessed in a population vaccinated against COVID-19.
- Clinical performance has not been established with all circulating variants but is anticipated to be reflective of the prevalent variants in circulation at the time and location of the clinical evaluation. Performance at the time of testing may vary depending on the variants circulating, including newly emerging strains of SARS-CoV-2 and their prevalence, which change over time.

## PERFORMANCE CHARACTERISTICS

### Clinical Performance

The human usability and clinical evaluation of the CovClear COVID-19 Rapid Antigen Test as an Over the Counter (OTC) test was evaluated at two testing sites in the United States. A total of 477 subjects were enrolled in an all-comers study, including both symptomatic (117) and asymptomatic (360) subjects. Symptomatic subjects were defined as those exhibiting at least one of the following signs and symptoms on day of presentation: Fever, cough, body aches, sore throat, chills, loss of taste or smell, congestion, or runny nose. Asymptomatic subjects were defined as subjects not experiencing COVID-19 symptoms on day of testing. Subjects either self-administered the test or administered the test to another subject in a simulated home setting, following the steps of the IFU and video available online (www.covcleartest.com). A nasal swab sample was also collected by a healthcare provider for testing using a US FDA authorized highly sensitive RT-PCR test. Swabs for the CovClear and comparator test were collected in a randomized manner to prevent bias in viral load.

Age distribution of the 477 subjects is presented below.

### Age distribution (by CovClear™ COVID-19 Rapid Antigen Test) per age group

| Age Group | Total Number of Subjects | N % (Number of subjects per age group/Total tested) |
|---|---|---|
| <18 years of age | 27.25% | 130 |
| 18-24 years of age | 9.01% | 43 |
| 25-29 years of age | 4.19% | 20 |
| 30 - 49 years of age | 30.19% | 144 |
| 50 - 64 years of age | 17.82% | 85 |
| 65+ years of age | 11.53% | 55 |
| **TOTAL** | **100.00%** | **477** |

Results from this study demonstrated that the CovClear COVID-19 Rapid Antigen Test can be performed accurately in an over-the-counter setting with a 96% PPA and 100% NPA..

The following table summarizes the Positive Percent Agreement (PPA) and Negative Percent Agreement (NPA) for the CovClear™ COVID-19 Rapid Antigen Test when compared with an FDA EUA high sensitivity molecular SARS-CoV-2 assay.

### Performance of the CovClear™ COVID-19 Rapid Antigen Test as compared to an FDA EUA high sensitivity molecular SARS-CoV-2 assay in ALL subjects

| CovClear™ COVID-19 Antigen | Comparator (RT-PCR) | | |
|---|---|---|---|
| | Positive | Negative | Total |
| Positive | 63 | 0 | 63 |
| Negative | 3 | 411 | 414 |
| Total | 66 | 411 | 477 |
| Positive Percent Agreement (PPA) | 95.5% (95% CI:88.4%-98.7%) | | |
| Negative Percent Agreement (NPA) | 100% (95%CI:99.4%-100%) | | |

### Analytical Sensitivity: Limit of Detection (LoD)

The LoD for direct swab was established using heat-inactivated SARS-CoV-2 isolate Hong Kong/VM20001061/2020). The strain was spiked into nasal swabs and evaluated in clinical nasal wash solution. The estimated LoD found from the initial two- fold serial dilution test was confirmed by testing 20 replicates. The confirmed LoD for direct swab was $1.29 \times 10^5$ $TCID_{50}$/ml.

### Specimen Stability:

The specimen stability was established using heat-inactivated SARS-CoV-2 isolate Hong Kong/VM20001061/2020. Nasal swabs spiked with the heat-inactivated SARS-CoV-2 isolate Hong Kong/VM20001061/2020 at 3X LOD were incubated at room temperature for 0, 2, 5, 24 and 52hours respectively prior to testing. All samples tested produced no qualitative impact on test line signal intensity as compared to the 0-hour condition, demonstrating that the CovClear™ COVID-19 Rapid Antigen Test performance was not affected by sample Instability for up to 24 hours at room temperature.

### Analytical Specificity: Cross Reactivity and Microbial Interference

The potential cross-reactivity (exclusivity) of a panel of common organisms was evaluated with SARS-CoV-2 negative samples using the CovClear™ COVID-19 Rapid Antigen Test. Potential microbial interference was evaluated with samples containing heat-inactivated SARS-CoV-2 isolate Hong Kong/VM20001061/2020 at approximately 3x LoD. A total of twenty-five (25) potential cross-reactant samples were evaluated for cross-reactivity at predefined concentrations in accordance with the EUA guidelines Antigen Template for Test Developers (version October 26, 2020). No cross-reactivity was observed with the CovClear™ COVID-19 Rapid Antigen Test.

| Viral Pathogens | Bacterial Pathogens |
|---|---|
| Coronavirus OCN43 (Culture Fluid) | Mycoplasma pneumoniae |
| Coronavirus 229E (Heat inactivated) | Bordetella pertussis |
| Coronavirus NL63 (Heat inactivated) | Candida albicans |
| Parainfluenza Virus Type 3 (Culture Fluid) | Streptococcus pyogenes |
| Parainfluenza Virus Type 2 (Culture Fluid) | Streptococcus pneumoniae |
| Parainfluenza Virus Type 1 (Culture Fluid) | Hemophilus influenza |
| Human Metapneumovirus 16 (Culture Fluid) | Legionella pneumonia |
| Adenovirus (Culture Fluid) | Staphylococcus epidermidis |
| Parainfluenza Virus Type 4A (Culture Fluid) | Staphylococcus aureus |
| Influenza A H1N1 Virus (Culture Fluid) | Nasal Wash |
| Influenza B Virus (Culture Fluid) | Chlamydophila pneumoniae |
| Enterovirus Type 68 (Culture Fluid) | |
| Respiratory Syncytial Virus Type A (Culture Fluid) | |
| MERS-CoV (Culture Fluid, Heat Inactivated) | |
| Coronavirus OCN43 (Culture Fluid) | |
| Coronavirus 229E (Heat inactivated) | |

To estimate the likelihood of cross-reactivity with SARS-CoV-2 of organisms that were not available for wet testing, in silico analysis using the Basic Local Alignment Search Tool (BLAST) managed by the National Center for Biotechnology Information (NCBI) was used to assess the degree of protein sequence homology.

- Alignment between the nucleocapsid protein of SARS-CoV-2 and nucleocapsid protein from the Human Coronavirus HKU1 showed sequence identity of 73%. The homology between SARS-CoV-2 nucleocapsid protein and Mycobacterium tuberculosis total protein (3,991 proteins) is relatively low, homology-based cross-reactivity can be ruled out.
- The homology between SARS-CoV-2 nucleocapsid protein and Pneumocystis jirovecii total protein (3,745 proteins) is relatively low, homology-based cross-reactivity can be ruled out

### Endogenous Interfering Substances Effect

To assess substances with the potential to interfere with the performance of the CovClear™ COVID-19 Rapid Antigen, positive and negative samples were tested with the addition of potentially interfering substances. The SARS-CoV-2 target concentration in the positive samples was approximately 3x LoD. All samples tested produced no qualitative impact to test line signal intensity, demonstrating that the CovClear™ COVID-19 Rapid Antigen Test performance was not affected by any of the 14 potentially interfering substances listed in the table below at the concentrations tested.

| Potential Interfering Substances | Concentration | Potential Interfering Substances | Concentration |
|---|---|---|---|
| Whole Blood | 4% | Zicam | 5% v/v |
| Mucin | 0.5% | Homeopathic (Alkalol) | 1:10 dilution |
| Chloraseptic (Menthol/Benzocaine) | 1.5 mg/mL | Sore Throat Phenol Spray | 15% v/v |
| NasoGEL (NeilMed) | 5% v/v | Tobramycin | 4 µg/mL |
| CVS Nasal Drops (Phenylephrine) | 15% v/v | Mupirocin | 10 mg/mL |
| Afrin (Oxymetazoline) | 15% v/v | Fluticasone Propionate | 5% v/v |
| CVS Nasal Spray (Cromolyn) | 15% v/v | Tamiflu (Oseltamivir Phosphate) | 5 mg/mL |

### High-dose Hook Effect

The CovClear™ COVID-19 Rapid Antigen was tested up to $2.58x10^6$ $TCID_{50}$/ml of heat-inactivated SARS- CoV-2 strain and no high-dose hook effect was observed.

### Technical Support

For questions, or to report a problem, please call Empowered Diagnostics at 954-354-2768.

Test system problems may also be reported to the FDA using the MedWatch reporting system (phone: 1-800-FDA-1088; fax: 1-800-FDA-1078: or http://www.fda.gov/medwatch).

### Glossary of Symbols

- Manufacturer
- Temperature Limitation
- Do Not Reuse
- Do Not Use if Damaged
- Conforms with European Union Standards
- *In Vitro* Diagnostic Medical Device
- Consult Instructions for Use
- Keep Away from Rain
- Reference Number