

WHOCC webinar for ethnic minorities in Hong Kong: Rapid Antigen Test (RAT): when and how to take this test?

WHO CC Webinar

March 26th 2022

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Rapid Antigen Test

What is it?

Why/when should I do it?

How can I do the test correctly?

How do I read the results?

What then?





Stop COVID-19

Break the chain of infection



STAY HOME
If you feel unwell
and get tested



VACCINATE
and keep up-to-date



1.5m
PHYSICAL DISTANCING
when outside your home



WEAR
a mask as recommended



CLEAN
hands frequently



CLEAN
frequently touched
surfaces



COVER
coughs & sneezes with a
tissue or your inner elbow
and place used tissues in
bin immediately

Background

- The gold standard test for detecting Omicron (and other variants of SARS-CoV-2) is reverse transcription PCR (rRT-PCR) approved by the WHO
- However, labs have been overwhelmed during the pandemic
- It is critically important to identify suspected and asymptomatic cases as soon as possible in order to break the chain of infection
- This is especially challenging with Omicron as it replicates very quickly and is highly infectious

Why do a Rapid Antigen Test?

Self-administer
a rapid antigen
test

- For "early identification, early isolation and early treatment"
- Aims to identify those who have been infected as soon as possible

Get tested if:

- If you have symptoms or think you may have been exposed
- If you wish to be cautious before visiting friends, family

Rapid Antigen Tests

- Detects SARS-CoV-2 virus proteins (**antigens**) from upper respiratory tract using specific monoclonal **antibodies**
- Tells if you are currently infected (not if you have previously been infected and now recovered)
- May not detect low levels of virus (early in infection)
- Single use tests
- Process immediately –do not leave the sample lying around!
- Work in a similar way to a pregnancy test
- They are also known as lateral flow tests

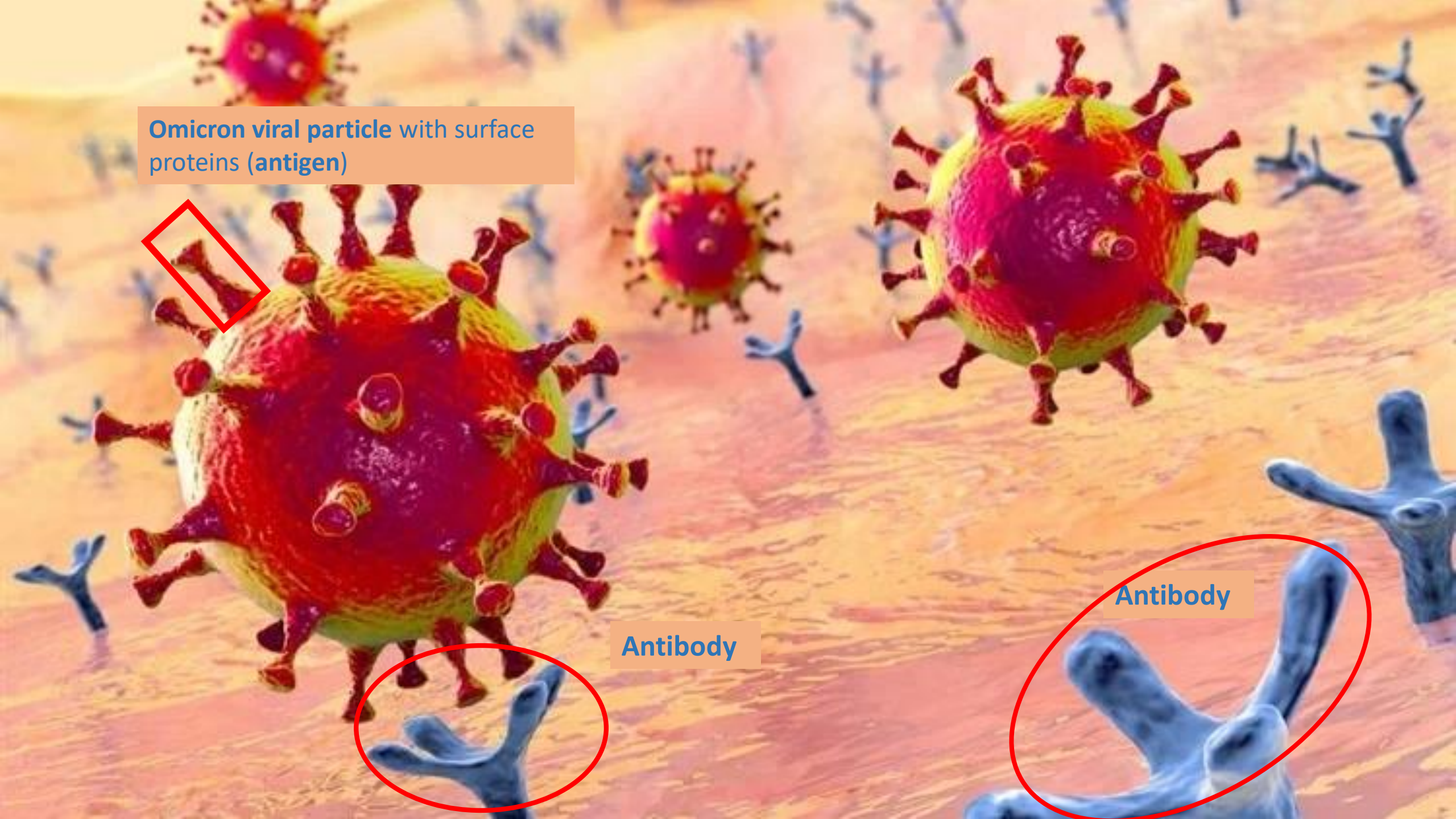
Omicron viral particle with surface proteins (antigen)



Antibody



Antibody



How to do the test

- Please check the user guide of the particular brand you are using before doing the test
- Only a nose swab is needed –collect by yourself-most of the test kits in use in Hong Kong require just a nose swab

How the test works

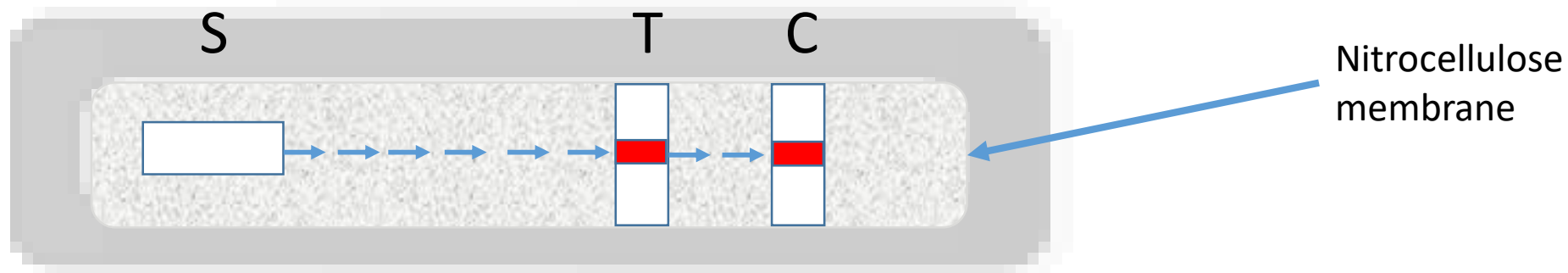
The test pad contains:

- SARS-CoV-2 specific antibody
- Control antibody (recognizes other proteins from our nose)- acts as a check to make sure we have performed the test correctly
- We should always have a line here at the end of the test
- Both types of antibody are immobilized onto a nitrocellulose membrane support as two distinct lines

Sample pad:
Insert 2-3
drops of
sample here

SARS-CoV-2
specific
antibody

Control
antibody



The sample flows laterally

Contents of the RAT kit

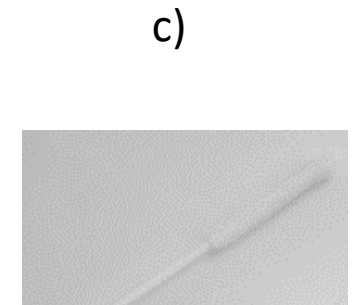
RAT kit and take all items out.

You should find three items in your kit

a) The swab

b) Extraction buffer solution (this bottle has a dropper on the lid)

c) Test slide





1. Prepare a clean and dry even surface

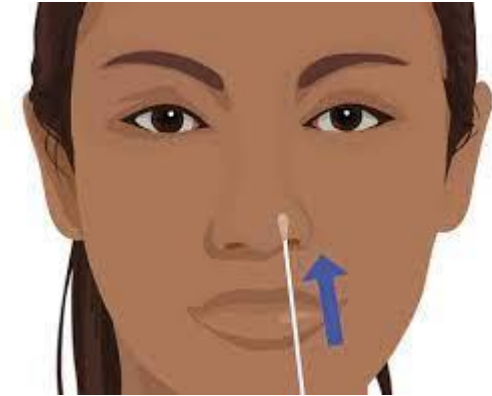
- Wash your hands carefully and dry them thoroughly or use a generous amount of alcohol hand rub

2. Open your RAT kit and take out all items

- Remove the cap of the bottle-make sure you do not spill any of the liquid
- Place your bottle on a smooth surface and make sure it is stable (cannot spill over)

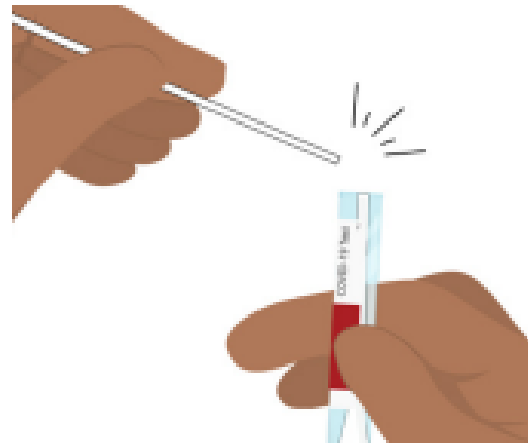
3. Collect your nasal swab

- Open the package that contains the swab. Be careful to open the correct end- do not touch the swab
- Insert the cotton tip of the swab into one side of your nose –push up approx. $\frac{3}{4}$ inch (1.5 cm)
- Then rotate the swab five times while pushing against your nasal bone
- Slowly remove the swab from your nostril
- Now change sides and repeat the process (still using the same swab)
- Note: If this causes you to sneeze, take a tissue and wipe your nose, then put the tissue in the bin (do not put on table etc.)



4. Remove the swab

- Check if there is blood on the swab? If yes, you must throw away and try again another time
- Put the swab into the bottle of buffer liquid
- Mix the swab in to the liquid-to release any virus present (swirl around several times)
- Drop 2-3 drops of the liquid onto the slide
- Wait 20 mins (or according to instructions on kit)

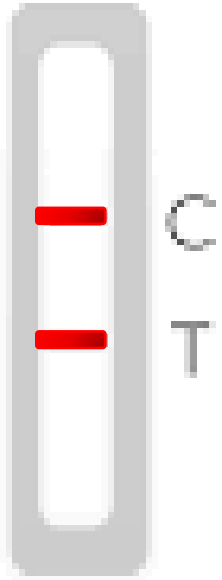


- 5. After the recommended time has passed → read results
- 6. Dispose of all leftover items (put back in bag and dispose), wash your hands again

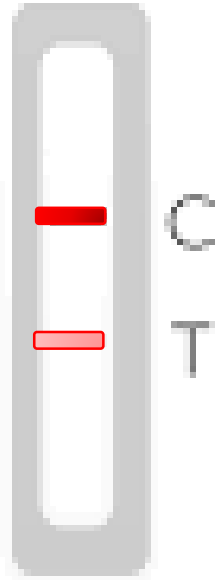


Reading the results

Even a faint red line=positive



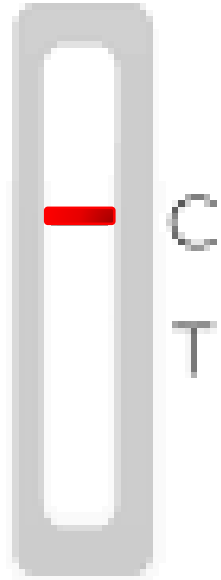
Positive



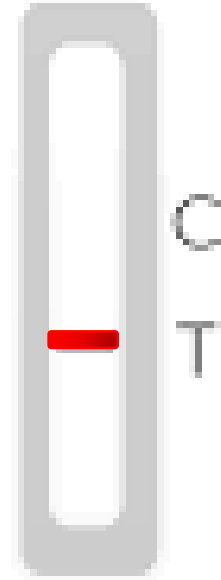
Positive

Positive=must have two red lines

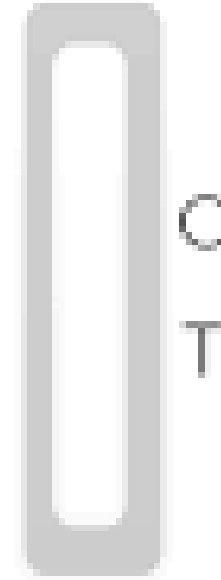
If only the test line or no line appears → the test is not working



Negative (the test was done properly because we can see the red line at the C but the patient is negative)



Not working correctly (invalid)
Do not trust this result -
Must do again



Invalid

Must do again

False negative?

- You are infected but there is not enough viral antigen present (yet) to be detected by RAT
- Or you are recovering from the infection and the amount of viral antigen is low
- (i.e. during early or in late stage of infection)
- You are infected with a new SARS-CoV-2 variant that cannot be detected by the current test

False positives



Short Communication

How to (ab)use a COVID-19 antigen rapid test with soft drinks?

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Abstract

With reasonably good specificity and sensitivity, the speed and convenience of COVID-19 antigen tests have led to self-testing in schools, offices, and universities in the European Union (EU). Although self-testing can be beneficial and increase the accessibility to testing, there are potential ways to confound a positive COVID-19 lateral flow test. We observed that all soft drinks, energy drinks, alcoholic beverages (vodka, whiskey, and brandy), commercially bottled mineral water, and carbonated mineral water caused the appearance of a red test line.

However, when equal volumes of the buffer and the respective beverages are mixed, there are no false-positive test lines. Deceitful methods may easily lead to misuse of COVID-19 antigen rapid tests and lead to false-positive results; however, this does not prove that these tests are unreliable when performed correctly.

The extraction buffer is optimized to release antigens from the SARS-CoV-2 virus present in the specimen

How do you know if you have purchased a good quality RAT?

- <https://www.mdd.gov.hk/en/whats-new/rapid-antigen-tests-covid-19/index.html>
- According to the World Health Organization, RAT kits for home use should have a minimum sensitivity of 80% and specificity of 97%

COVID-19

Version date: 13 March 2022

Testing Positive by Rapid Antigen Test (RAT)



- ✓ Photograph the result
- ✓ Stay at home, don't go out
- ✓ Report the result (within 24 hours)

www.chp.gov.hk/ratp
or 183 6119 (if you can't log on)



1 Provide

- RAT details
- Personal information and details of household contacts
- Details of household environment
- Symptoms

2 Receive SMS

- Upload: Photo of RAT result + identity document
- Download: Isolation Order



Household member receives SMS

- Upload: Identity document
- Download: Quarantine Order



Cases are triaged based on risk assessment

High risk

e.g. elders in serious conditions, people with warning symptoms*

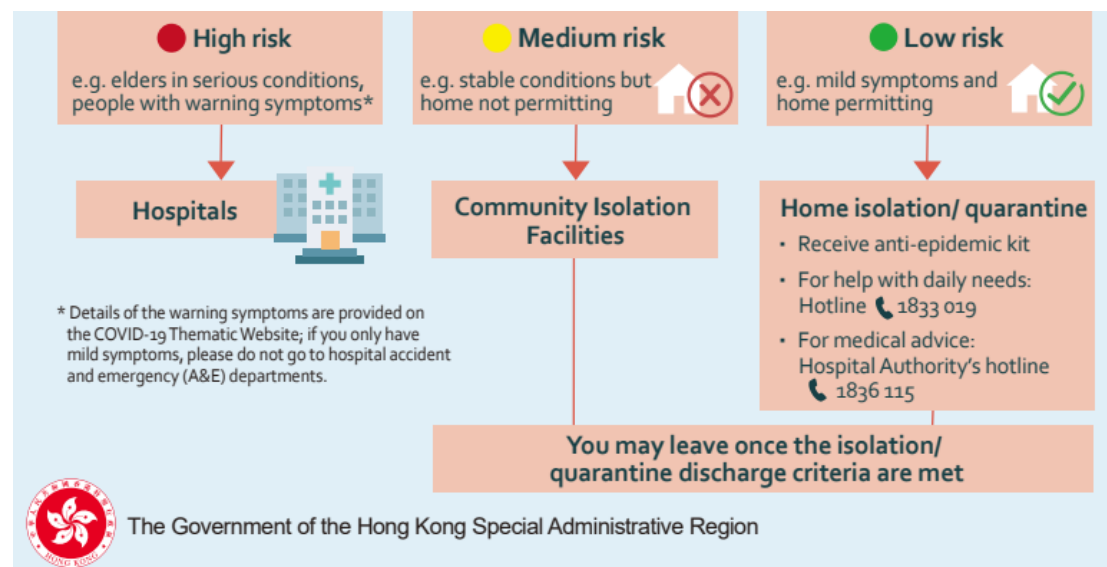
Medium risk

e.g. stable conditions but home not permitting

Low risk

e.g. mild symptoms and home permitting

If you test positive.....



https://www.coronavirus.gov.hk/rat/pdf/rat_flowchart_en.pdf



Thank you