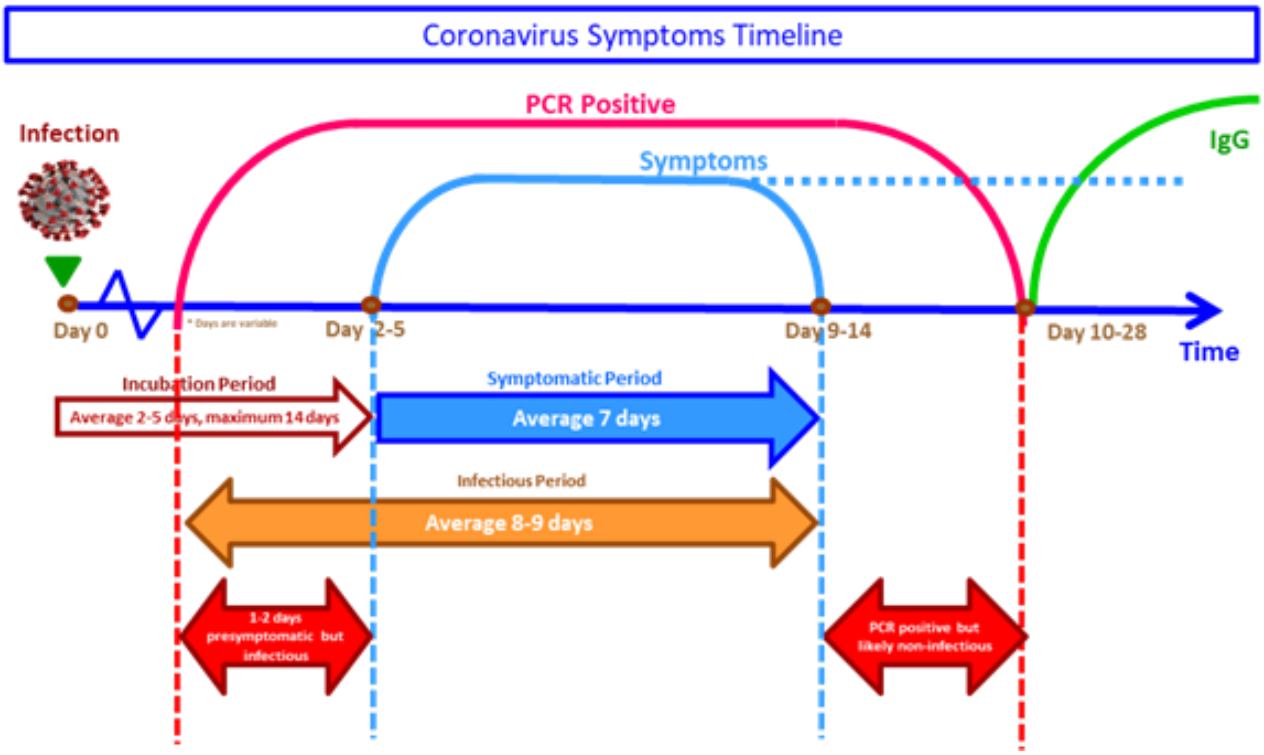
SARS-CoV-2 and COVID-19 infections

General information

SARS-CoV-2	the name of the pandemic coronavirus
Covid-19	the disease caused by SARS-CoV-2

On 31st December 2019, a cluster of undiagnosed pneumonia cases were reported in Wuhan, China. The causative virus, SARS-CoV-2, was identified in January 2020, and rapidly spread through China and across the globe. By 16th May 2020, nearly four and a half million (4,425,485) confirmed cases of 2019 novel coronavirus disease (COVID-19) had been reported worldwide.

There are still many unanswered questions and areas of uncertainty.
This FAQ will not provide exhaustive data, rather a pragmatic resume of the current evidence



Incubation period: from when you first meet the virus, to when you develop symptoms. It is about 2—5 days but can be up to 14 days

Infectious period: this is the time period when you can pass the infection to someone else. This can start from 1—2 days BEFORE your symptoms start, and continues for about 7 days AFTER symptoms start.

Symptomatic period: Symptoms are variable: Fever: 80%; fatigue/extreme tiredness:70%; Cough: 59%; Loss of appetite: 40%; Body aches/malaise; Shortness of breath; Sore throat, Headache, Anosmia (loss of sense of smell); Nausea, Vomiting, Diarrhoea.

Asymptomatic cases: some people do not develop any symptoms and remain asymptomatic — we do not know how common this is.

The red arrows: patient / staff is PCR positive but asymptomatic – this can either be pre-symptomatic in which case they are infectious, or post recovery from symptoms in which case they are not infectious.

Irrespective of antibody status or previous PCR results:

Everyone needs to following social distancing and PPE guidelines

If you develop symptoms, you need swabbing for COVID-19 PCR.

Health Care Staff should continue to adhere to safe working practices, hand hygiene, PPE use and infection prevention and control advice

Most people with COVID-19 are infectious for 7 days after the onset of symptoms; it is not yet clear how long an asymptomatic person remains infectious but we recommend return to work 7 days after the positive test result so long as you remain well.

Screening is part of a whole package of infection prevention and control measures, which includes hand hygiene, PPE and strict cleaning and decontamination procedures. These prevent transmission between staff and patients, and are very effective.

SARS-CoV-2 PCR test

In the lab, we perform a PCR test (Nucleic-Acid-Amplification-Test) to detect viral RNA for SARS-CoV-2, the virus that causes COVID-19. If present it means the patient / staff has recently been infected. This test is done on a Naso-pharyngeal swab sample (using a single swab — swab throat first, then (using same swab) the nose).

There are 3 genes which we look for: N gene, E gene and RDRP gene. Depending on the platform two or three of these genes are quantified; it may be worth checking with us which genes were positive (as a ready reckoner: N gene most sensitive, E gene least specific) if you are surprised by a result.

The test does not determine when you were first infected, or whether you are still infectious since the RNA we detect may be old and there may not be actively replicating virus present. This test cannot tell if you have previously been infected and the infection is now cleared.

We are using the PCR test in two ways:

(i) Symptomatic patients / staff with onset in the preceding 7 days. This is for diagnosis.

(ii) Asymptomatic patients / staff. This is screening. The aim of screening is to detect cases of COVID-19 before they become symptomatic (see picture above – red arrows). This may then allow you to self-isolate and hence reduce onward transmission to other staff and patients, or to postpone a patient who is due surgery for their own and for staff safety.

SARS-CoV-2 Antibody test

Antibody screening (also called serology) looks for IgG and IgM (total antibodies) in your blood. We are using the Roche kit in Exeter, Torbay and North Devon which detects antibodies to the Nucleocapsid (N) antigen. These are antibodies against COVID-19: they are produced by your White Blood Cells (B-cells) when you first meet a new infection and are part of your body's adaptive immune response to infection which is designed to protect you against infections. IgM is produced first, and then IgG.

(i) Antibodies are a marker of **recent** or **past** infection—they do not tell you whether you are currently infected (for this, you need the PCR swab test), or how recently the infection occurred.

(ii) We do not yet know if having antibodies will confer 'immunity' to future COVID-19 infections — ie whether the antibodies protect you against another COVID-19 infection. There are other parts of your immune system which might prove more important (eg T-cell response).

(iii) We also do not know when you first develop antibodies after an infection, and how long they last for, though most people develop antibodies by 28 days (green line in picture), and almost all by 40 days after infection.

(iv) The level of antibody may also be important, but is not precisely quantifiable at the moment — you will get a result of DETECTED or NOT DETECTED.

Q1. Can I offer COVID-19 antibody screening to all my patients and staff?

Yes, you can. The limiting factor is likely to be phlebotomy. Please make it clear whether staff member or patient in the automated questions / clinical details. Ensure you order any tests electronically. If you are not yet on ICE, please use the standard blood sciences request form (H7) to request.

Q2. I/My patient have got symptoms (onset in the last week) which might be COVID-19 – what should I do?

Follow PHE advice. Isolate yourself at home until you get the result of the PCR test.
Track and Trace is now up and running through Public Health England.

Staff members and their families are offered PCR swab testing directly through the RDE:
RDE: contact the Staffing absence hub: rde-tr.covid19hrabsencehub@nhs.net
CCG / Primary Care staff/Care Home staff + residents: contact the CCG who will arrange a PCR swab test for you: Email: d-ccg.devoncovid19testing@nhs.net
(RDE are running both these swabbing services by kind agreement from the Exeter Chiefs at the Sandy Park Rugby Ground, and with the support of Devon Free Wheelers)

Members of the public should get PCR swab tested via the NHS website
https://www.nhs.uk/conditions/coronavirus-covid-19/testing-and-tracing/
(the PHE/NHS is currently sending patients to Honiton Road Park and Ride testing centre).

Q3. I think I had COVID-19 (not tested by PCR) over 1 week ago, what should I do?

Your GP can offer you the blood test for antibody to SARS-CoV-2 from 6 weeks after the infection. This is positive in 94% of patients who have had COVID-19 (lower rates if take sample before 40 days). It has a high specificity ie if positive it is very likely to mean you have had COVID-19.
At this stage, there is NO evidence that this will protect you from repeated infections. We therefore recommend EXACTLY the same infection prevention and control practises regardless of your antibody result.

Q4. How quickly and how long do antibodies last for?

Antibodies usually develop by day 28 – 40 after onset of symptoms. We do not know how long an antibody response lasts – this is because the antibody test has only recently been developed and so data gathering is on-going. Also there are no patients who had the infection longer than 6 months ago so we have no (or limited) longitudinal data. We are a recruitment centre for a National study (called the SIREN study) to address this question. If you want further information please contact Microbiology on rde-tr.Microconsultants@nhs.net

Q5. Do antibodies provide any protection against further infections?

We do not know whether having antibodies will prevent you being re-infected or from being able to transmit the virus to others. We therefore recommend EXACTLY the same infection prevention and control practises regardless of your antibody result.
We are a recruitment centre for a National study (called the SIREN study) to address this question. If you want further information please contact Microbiology on

Q6. The antibody test is negative though I am sure the patient / I was infected.

Repeat at 40 days after infection if the test was taken too early. The test is very sensitive but will still miss some cases (approximately 1 in every 20 or 30 cases). This might be because some people do not mount an antibody response to this particular antigen (the N-antigen). We do not know yet whether there are other elements of the immune system which might be positive (eg antibodies to other components of the virus, T cells).

Q7. I have had PCR proven COVID-19, can I get reinfected?

There is no evidence yet to suggest that those who have been proven to have had the virus are immune. Therefore you are possibly at on-going risk of infection even with a positive antibody. We therefore recommend EXACTLY the same infection prevention and control practises regardless of your history or antibody result.

Q8. What is the contact for these tests in the labs?

The PCR test is being run in Microbiology; the Serology test is being processed in blood sciences under the auspices of Microbiology. Please contact: rde-tr.Microconsultants@nhs.net