

COVID-19 : A Guide for All

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A microscopic image showing numerous coronavirus particles. Each particle is roughly spherical with a distinct outer shell and a textured, bumpy surface. They are arranged in a fan-like pattern, radiating from a central point. The background is dark, making the light-colored particles stand out.

Coronavirus – What, why and where

- 31st December 2019 – World Health Organisation was informed of a cluster of pneumonia cases of unknown cause in Wuhan, Hubei Province, China
- A novel coronavirus was subsequently identified – SARS coronavirus -2 (SARS-CoV-2)
- SARS – Severe Acute Respiratory Syndrome
- The infection caused by SARS-CoV-2 has been termed COVID-19
- The resulting spread of the virus has led to a global pandemic



A Global Threat

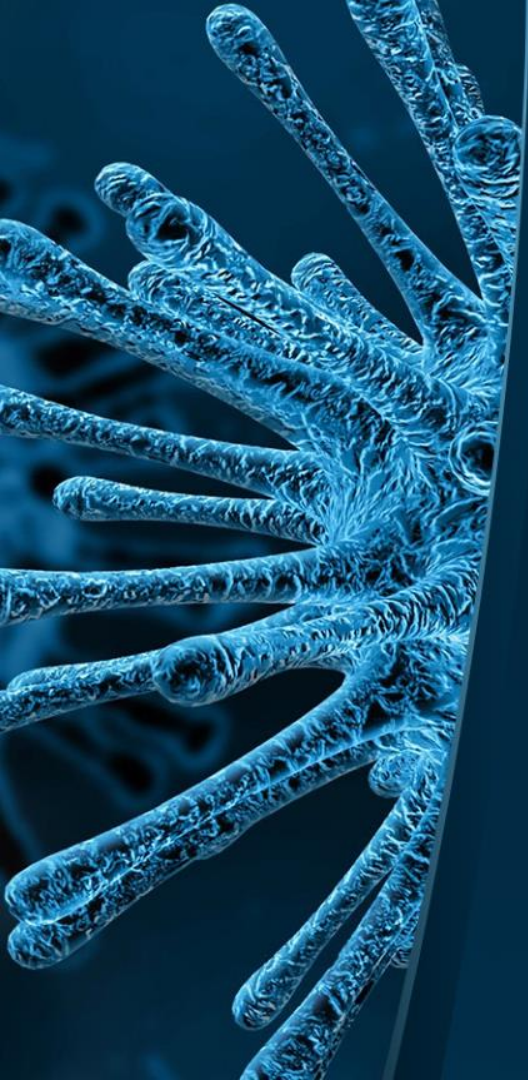
- As of 10th April 2020 – 1.56 million infections diagnosed
- Over 95,000 fatalities
- In the 15 days up to 10th April over 1.03 million cases were reported (2/3rds of total since December 2019)
- As of 9am 12th April the UK 350,000 tests have been carried out
- ~84,000 tested positive
- Of those hospitalised >10,600 deaths have occurred

A microscopic image of a virus particle, likely SARS-CoV-2, showing its characteristic crown-like structure with numerous surface proteins. The image is rendered in a blue and white color scheme, with the virus appearing as a complex, branching structure against a dark background.

Transmission of the virus

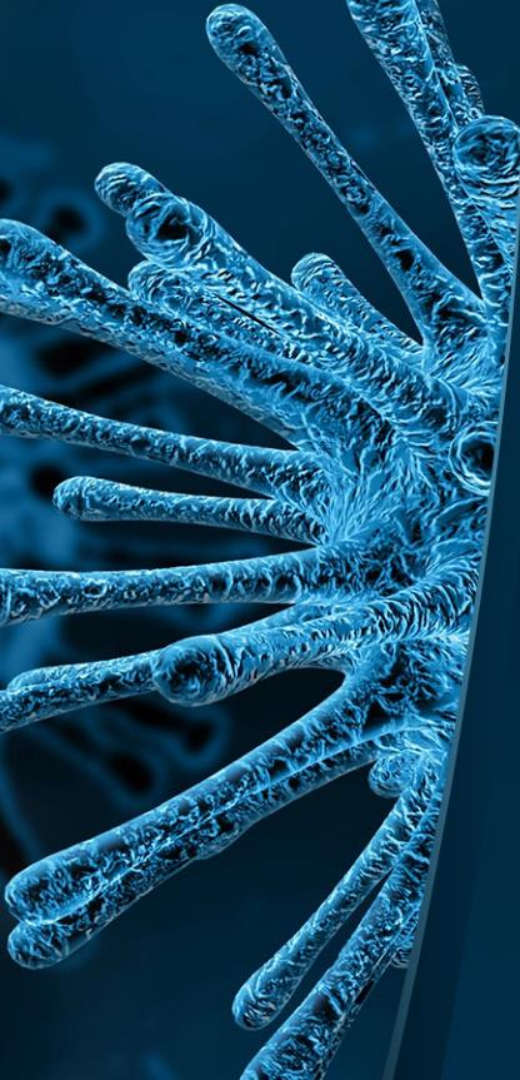
In January 2020 preliminary investigations in China identified environmental samples positive for SARS-CoV-2 in Huanan Seafood Wholesale Market in Wuhan City. However, some laboratory-confirmed positive patients did not report visiting this market

- Respiratory droplets
- Contact points
- Human to human interaction
- Aerosols
- Present in respiratory secretions
- Detected in blood, urine and faeces



Clinical features

- Fever
- Continuous cough or chest tightness
- Myalgia
- Fatigue
- Dyspnoea (shortness of breath)
- Chest X-rays show bilateral infiltrates similar to other types of viral pneumonia



Management of suspected cases – Hospital Admission

- Requiring admission to hospital (a hospital practitioner has decided that admission to hospital is required with an expectation that the patient will need to stay at least one night)

and


- have either clinical or radiological evidence of pneumonia

or

- acute respiratory distress syndrome

or

- influenza like illness (fever $\geq 37.8^{\circ}\text{C}$ and at least one of the following respiratory symptoms, which must be of acute onset: persistent cough (with or without sputum), hoarseness, nasal discharge or congestion, shortness of breath, sore throat, wheezing, sneezing)

A microscopic image of a virus particle, likely a coronavirus, showing its characteristic crown-like structure with numerous spike proteins extending from its surface. The image is rendered in shades of blue and white, with a dark blue curved border at the bottom.

Management of suspected cases – well enough to remain in the community

- new continuous cough and/or
- high temperature

Individuals with cough or fever should now stay at home. Those staying at home are not prioritised for testing.

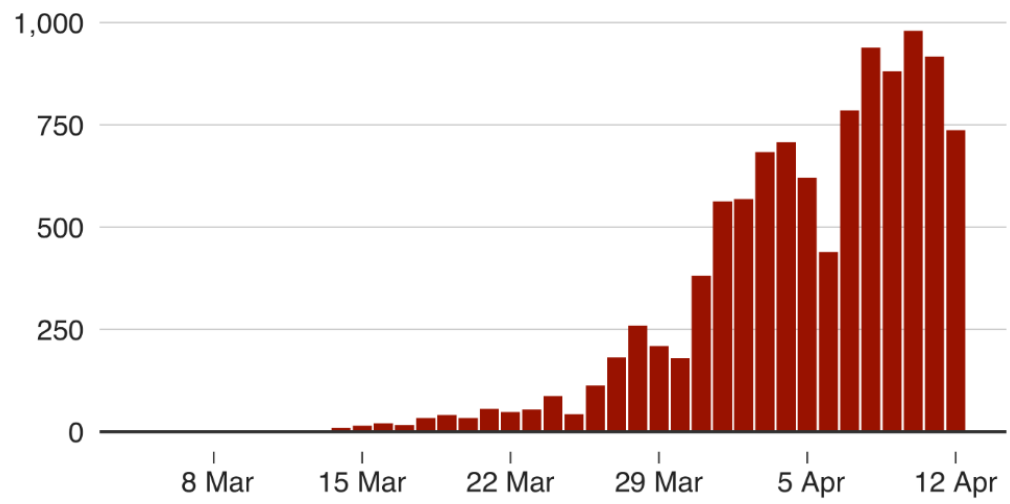
A microscopic image of a virus particle, showing a central core surrounded by a complex, multi-layered outer shell with numerous protrusions, resembling a starburst or a flower. The image is rendered in shades of blue and white, with a dark blue background.

Measures to prevent infection

- Hand hygiene and PPE
- Social distancing – Stay 2m apart
- Don't interact with anyone outside of your household
- LOCKDOWN – only leave your home for essential trips
 - medical reasons
 - to buy food and essentials
 - to exercise once a day, alone or with members of your household
 - to work only if working from home is not possible

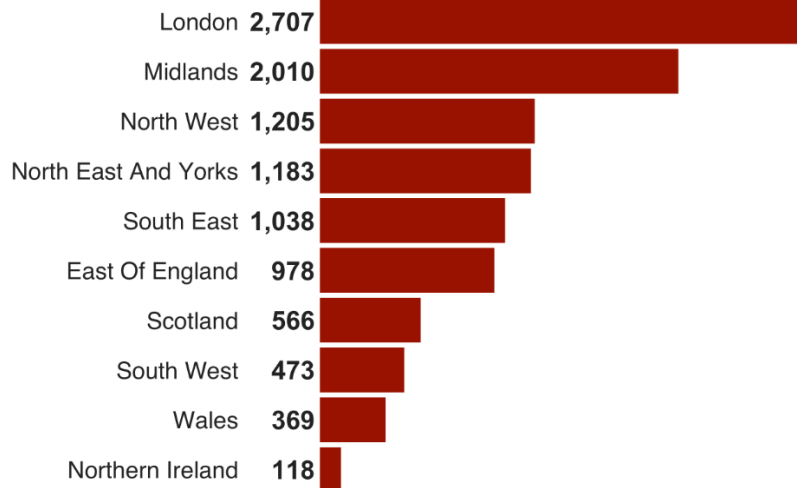
Hospital deaths in the UK – we join Spain, Italy, France and US with >10,000 deaths (up to 12th April 2020)

UK daily reported deaths of patients in hospital with coronavirus

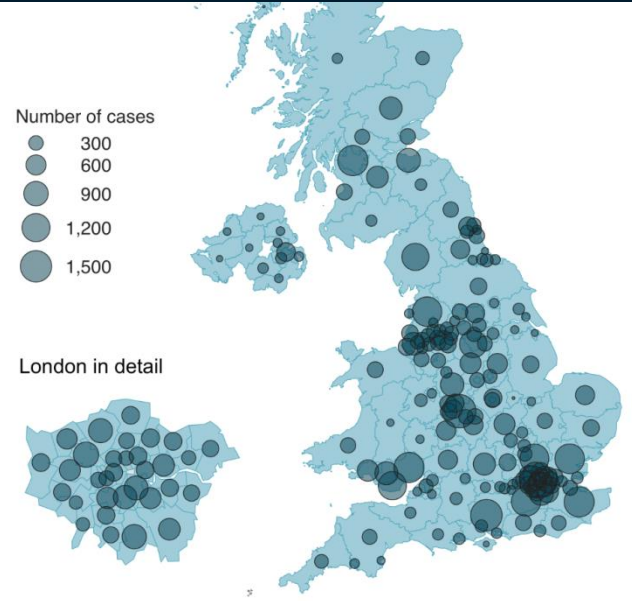


How is the UK progressing? UK deaths by region – Most deaths in London and highly populated areas

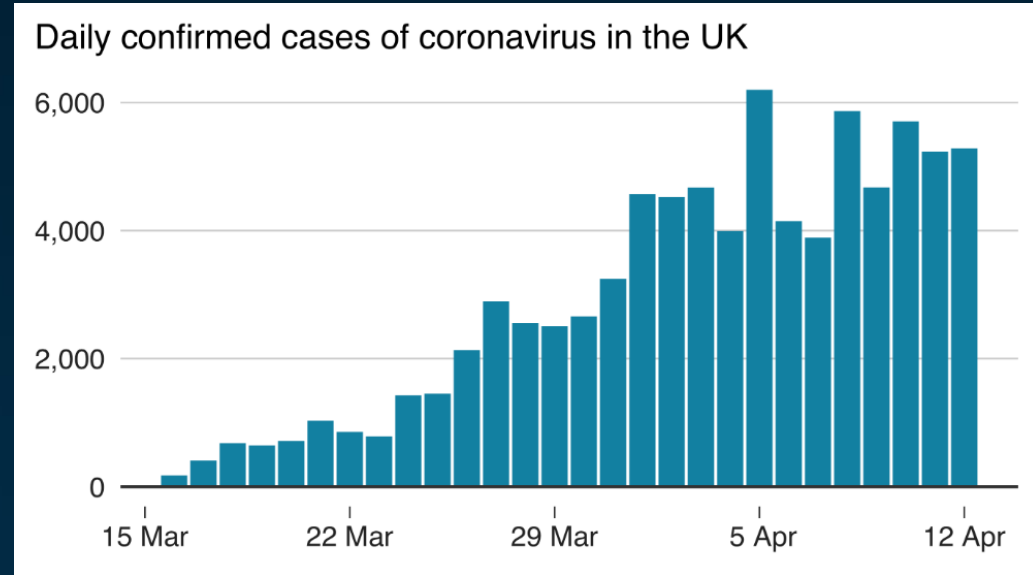
Number of coronavirus deaths by NHS region



Source: UK's national public health agencies, updated: 12 Apr 15:30 BST



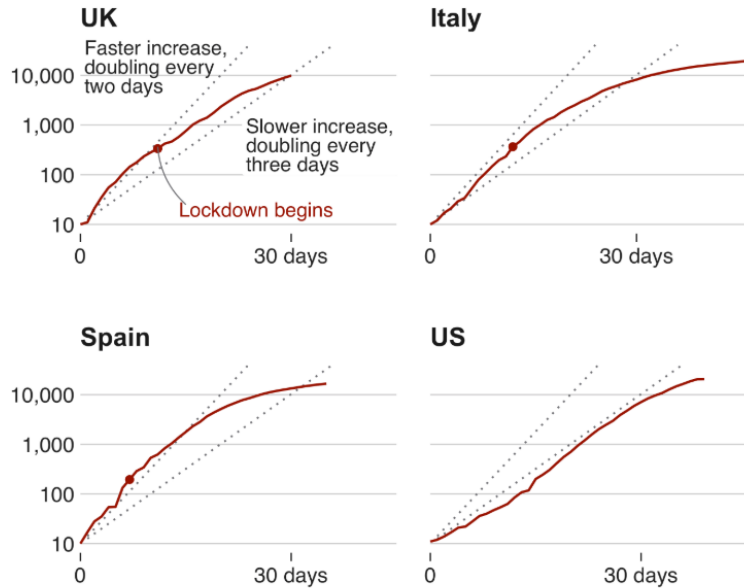
Deaths are still increasing but cases are slowing shown by modelling



This is why it is essential to continue social distancing; to continue to slow the number of infections and keep people out of hospital



Cumulative deaths, days since 10th death in each country

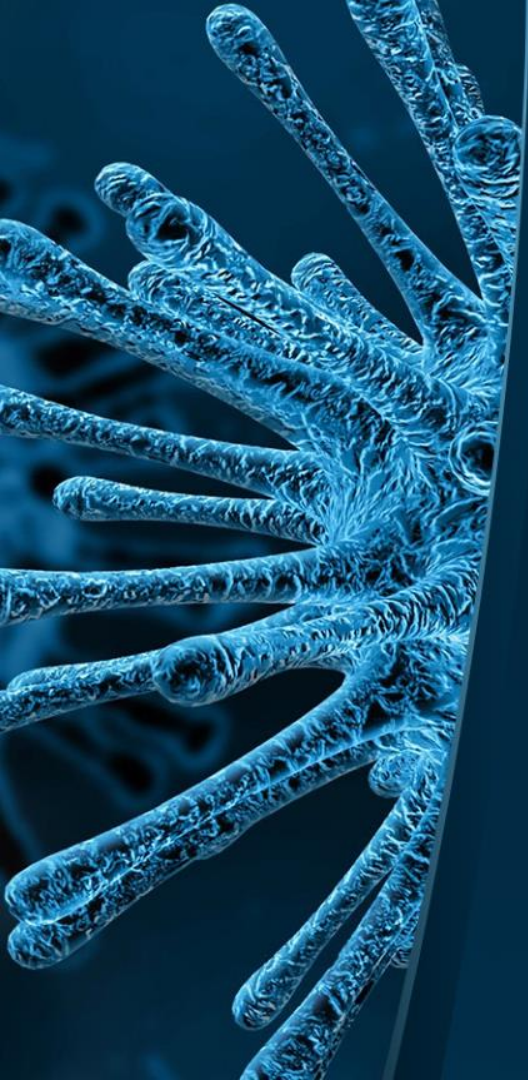


Log scale. Note: No nationwide lockdown in US

Source: Johns Hopkins University, updated: 12 Apr 10:30 BST



- The graphs show that each country is reporting a slow down in deaths
- The UK death rate is now doubling every 3 days at 30 days, rather than 2 days at 10 days
- The UK should show a levelling off in the coming week or so
- The US is showing a slower levelling off



Testing for SARS-CoV-2

- The preferred test methodology is molecular testing in a microbiology laboratory
- Tests identify genetic targets in the virus structure but differ from manufacturer to manufacturer
- Tests are PCR based and require nasal and throat swabs to capture enough viral material



Testing for SARS-CoV-2

- No test is 100% specific or sensitive
- Swabs may not pick up enough viral material so there is a pre-analytical element to successfully detecting the virus
- There are now antibody and antigen tests available
- These tests try to identify when an infection has occurred and an immune response elicited



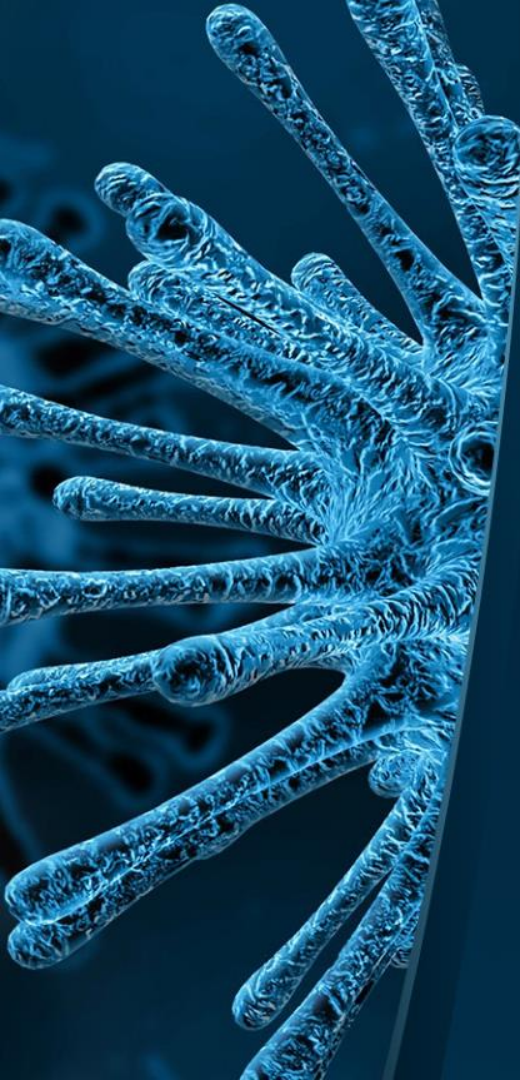
Antibody tests for SARS-CoV-2

- These tests are lateral flow methodology and detect IgG and/or IgM antibodies to the virus in fingerprick blood
- MHRA states sensitivity and specificity of these tests should be >98%
- None of these tests on the market currently meet this criteria
- There is debate as to 'when to test'
- Indications are 14-20 days after first symptoms of infection so that antibody levels are at a detectable level
- Some test kits state 10 days, so this is up for debate
- Risk of false negatives if testing too early and each individual could be different

A microscopic image showing numerous virus particles, likely coronaviruses, with their characteristic spike-like surface proteins. The particles are arranged in a fan-like pattern, radiating from a central point. The background is dark, and the particles are illuminated, showing their intricate structure.

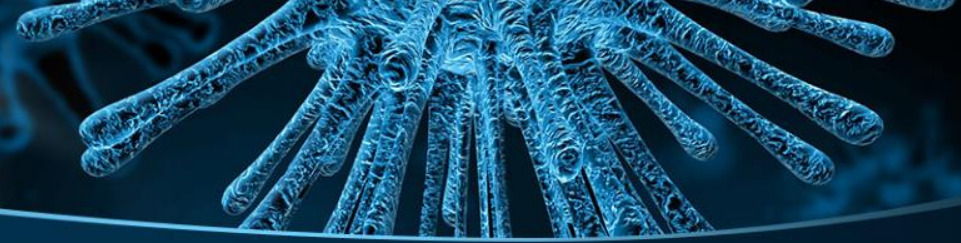
Testing Approach

- More healthcare and key workers are now being tested in order to ensure they can attend work and do not spread virus when asymptomatic
- Antibody tests may become useful for epidemiological studies, assessing immunity in the general community, and informing a vaccination programme in the future
- A vaccine is currently being worked on with September 2020 a possible date (requires trials and subject to constant change of course!)



What can we do as individuals, to combat the pandemic?

- Listen to the guidance, however tough it may be to observe
- Recognise that an extended Lockdown will ensure we are able to return to normal earlier
- Healthcare workers must protect themselves with appropriate PPE and good hand hygiene
- Make only essential journeys
- Stay positive, stay in touch with loved ones
- Look after your physical and mental health



Stay Safe.

Together we will defeat the virus
and minimise the long term
effects.

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