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Guidance

COVID-19: epidemiology, virology and clinical features

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Contents

This publication is available at https://www.gov.uk/government/publications/wuhan-novel-coronavirus-background-information/wuhan-novel-coronavirus-epidemiology-virology-and-clinical-features

Latest updates to this information

1 July 2020: updated with latest global case numbers.

1. Epidemiology

On 31 December 2019, the World Health Organization (WHO) was informed of a cluster of cases of pneumonia of unknown cause (http://www.who.int/csr/don/05-january-2020-pneumonia-of-unkown-cause-china/en/) detected in Wuhan City, Hubei Province, China.

On 12 January 2020 (http://www.who.int/csr/don/12-january-2020-novel-coronavirus-china/en/), it was announced that a novel coronavirus had been identified in samples obtained from cases and that initial analysis of virus genetic sequences suggested that this was the cause of the outbreak. This virus is referred to as SARS-CoV-2 (https://www.biorxiv.org/content/10.1101/2020.02.07.937862v1), and the associated disease as COVID-19.

As of 1 July 2020 (10:00am CET), over 10.4 million cases have been diagnosed globally with more than 511,000 fatalities. In the 14 days to 1 July, more than 2.3 million cases were reported (European Centre for Disease Prevention and Control, situation update worldwide (https://www.ecdc.europa.eu/en/geographical-distribution-2019-ncov-cases)).

The WHO coronavirus dashboard (https://who.sprinklr.com/) has country by country information. WHO also publishes a daily international situation report (https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/).

The total number of confirmed cases in the UK (https://www.gov.uk/guidance/coronavirus-covid-19-information-for-the-public) is published by the Department of Health and Social Care, and is available in a visual dashboard (https://coronavirus.data.gov.uk/).

2. Virology

Coronaviruses are a large family of viruses with some causing less severe disease, such as the common cold, and others causing more severe disease, such as Middle East respiratory syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) coronaviruses.

2.1 Nomenclature and characterisation

On 11 February, WHO (https://www.who.int/dg/speeches/detail/who-director-general-s-remarks-at-the-media-briefing-on-2019-ncov-on-11-february-2020) named the syndrome caused by this novel coronavirus COVID-19 (https://www.who.int/dg/speeches/detail/who-director-general-s-remarks-at-the-media-briefing-on-2019-ncov-on-11-february-2020) (Coronavirus Disease 2019) using its best practice guidance (https://www.who.int/topics/infectious_diseases/naming-new-diseases/en/).

The Coronavirus Study Group (CSG) of the International Committee on Taxonomy of Viruses (https://www.biorxiv.org/content/10.1101/2020.02.07.937862v1) designated the aetiological agent ‘severe acute respiratory syndrome coronavirus 2’ (SARS-CoV-2). Characterisation of SARS-CoV-2 is ongoing. The virus belongs to a group of genetically related coronaviruses that includes SARS-CoV and viruses isolated from bat populations. MERS-CoV also belongs to this group but is less closely related.

3. Transmission

The source of the outbreak has yet to be determined. A zoonotic source to the outbreak has not been identified yet, but investigations are ongoing.

According to current evidence, SARS-CoV-2 is primarily transmitted between people through respiratory droplets and contact routes. Airborne transmission is possible in specific settings in which procedures or support treatments that generate aerosols are performed.

At the moment, human-to-human transmission is occurring extensively. Hence, precautions to prevent human-to-human transmission are appropriate for both suspected and confirmed cases (see infection prevention and control guidance (https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control)).

In addition to respiratory secretions, SARS-CoV-2 has been detected in blood, faeces and urine.

4. Clinical features

COVID-19 presents with a range of symptoms of varying severity. Asymptomatic infection also occurs often although frequency is not defined.

More common symptoms are fever, a new and continuous cough, shortness of breath, fatigue, loss of appetite, anosmia (loss of smell) and ageusia (loss of taste). Non-specific symptoms include shortness of breath, fatigue, loss of appetite, myalgia, sore throat, headache, nasal congestion, diarrhoea, nausea and vomiting.

Atypical symptoms, such as delirium and reduced mobility, can present in older and immunocompromised people, often in the absence of a fever.

Of people who develop symptoms, current data indicate that 40% have mild symptoms without hypoxia (problems with the level of oxygen in the blood) or pneumonia, 40% have moderate symptoms and non-severe pneumonia, 15% have significant disease including severe pneumonia, and 5% experience critical disease with life-threatening complications.

Critical disease includes acute respiratory distress syndrome (ARDS), sepsis, septic shock, cardiac disease, thromboembolic events, such as pulmonary embolism and multi-organ failure.

Evidence is growing that the longer-term consequences of more severe complications associated with the inflammatory response may be considerable in those who experience critical and life-threatening illness. Rare neurological and psychiatric complications, which can also occur in patients without respiratory symptoms, include stroke, meningo-encephalitis, delirium, encephalopathy, anxiety, depression and sleep disturbances.

Risk of severe disease and death is higher in people who are older, male, from deprived areas or from certain non-white ethnicities. Certain underlying health conditions (https://www.gov.uk/government/publications/staying-alert-and-safe-social-distancing/staying-alert-and-safe-social-distancing#clinically-vulnerable-people), as well as obesity, increase risk in adults.

Infants and children generally appear to experience milder symptoms than adults and further evidence is needed about the association between underlying conditions and risk of COVID-19 disease in children. A rare presentation of multisystem inflammatory syndrome temporarily associated with COVID-19 in children and adolescents (https://www.who.int/news-room/commentaries/detail/multisystem-inflammatory-syndrome-in-children-and-adolescents-with-covid-19) has been noted.

Public Health England has issued guidance on the investigation and initial clinical management of possible cases (https://www.gov.uk/government/publications/wuhan-novel-coronavirus-initial-investigation-of-possible-cases).

4.1 Reference for section 4

WHO Clinical management of COVID-19 (https://www.who.int/publications/i/item/clinical-management-of-covid-19), published 27 May 2020.