COVID-19 and dental practice

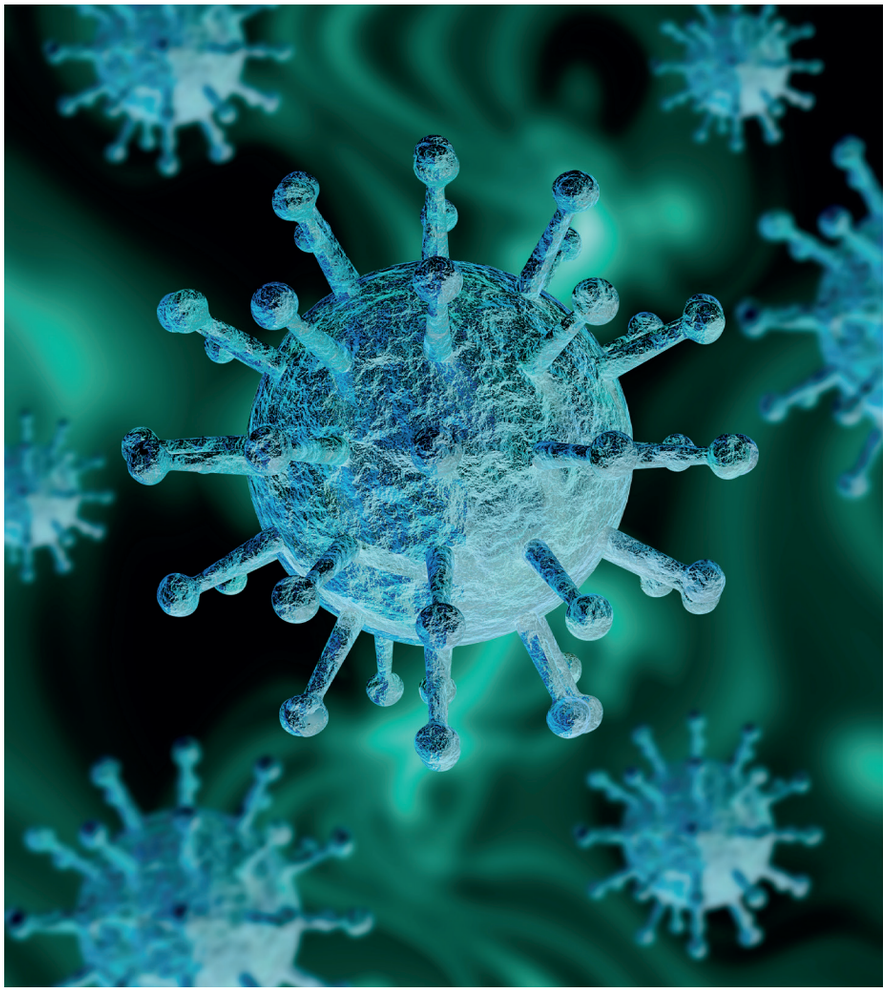
Microbiologist **Dr Tim Sandle** looks at some practical steps that can be taken to minimise any cross-infection risks

Nobody could fail to miss the media coverage about novel coronavirus COVID-19, with daily and sometimes hourly updates about the 'killer virus'. What exactly does it mean for dental practices in the UK?

At the time of writing (16 March 2020), the number of confirmed COVID-19 cases in the UK reached 1,391, and 35 people have died. England's chief medical officer Professor Chris Whitty has warned that an epidemic in the UK is looking 'likely'. Outside the UK, the rapidly spreading virus has reached 143 countries, with over 150,000 cases confirmed globally and nearly 6,000 deaths. Apart from Antarctica, every continent of the world is affected. The death toll in China, where the virus originated, is over 3,200. [WHO, 15 March] Italy is on lockdown and 1,809 people with COVID-19 have now died. The country is the hardest hit in Europe. In the United States, the president has declared a national emergency, with travel bans and some cities on lockdown.

COVID-19 is a coronavirus and belongs to the same family as the common cold and flu. Coronaviruses also cause more severe illnesses like Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). Like the common cold, COVID-19 infection usually occurs through close contact with a person who has the virus via coughing, sneezing or hand contact. Infection may also be spread by touching contaminated surfaces.

COVID-19 first came to public attention when, on 31 December 2019, the World Health Organization (WHO) was informed about a cluster of cases of pneumonia of unknown cause detected in Wuhan City, Hubei Province, China. On 12 January 2020 it was announced that a novel coronavirus had been identified in samples obtained from these cases and that an initial analysis suggested this virus was the cause of the outbreak. The virus is now referred to as SARS-CoV-2, and the associated disease as COVID-19.



Older people, and those with pre-existing medical conditions (such as diabetes and heart disease) appear to be more vulnerable to becoming severely ill with the virus. Fever, cough or chest tightness, and dyspnoea are the main symptoms currently being reported. While most cases report a mild illness, there are severe cases requiring intensive care.

The overall fatality rate is approximately 2% to 3% based on initial reports. Most of those who have died were older and had underlying health conditions. To put this in perspective, the fatality rates were approximately 37% for MERS and 10% for SARS. [Huang, 2020] However, the fatality rates are higher than those associated with influenza.

In the current absence of effective drugs or a vaccine for COVID-19, control of

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this virus relies on the prompt identification, appropriate risk assessment, management and isolation of possible and confirmed cases, and the investigation and follow up of close contacts to minimise potential onward transmission. In terms of diagnosing COVID-19, the UK was one of the first countries outside China to have a specific laboratory test for this new disease (a serological test based on PCR technology).

Public Health England [PHE, 2020] has classified COVID-19 as an airborne high consequence infectious disease (HCID), which means it requires specific infection prevention and control (IPC) measures for suspected and confirmed cases, in all healthcare settings including dental practices.

Cough, cold or flu-like symptoms

NHS England [NHS England, 2020] advises that, if a dental patient has a cough, cold or flu-like symptoms but no relevant (COVID-19) travel or contact history, then management of their dental care should proceed in line with best practice and routine management of the cross-infection risks to staff and patients.

Practice staff should be aware of the current guidance and be able to carry out an initial risk assessment based on a patient's travel and contact history with regards to COVID-19.

For a patient to be identified as potentially infected, they need to show clinical symptoms of COVID-19 and also have a recent history of travel to the identified risk countries or contact with a confirmed case. Patients presenting with symptoms 14 days after returning from a high-risk area can be treated as normal. However, patients who have been advised to self-isolate for COVID-19 should not be treated in the practice during this time, and appointments for elective care should be deferred. If urgent dental care is required, a self-isolating patient should be advised to call NHS 111.

Although 'most patients presenting in primary dental care settings are unlikely to have COVID-19,' Public Health England recommends that 'effective infection prevention and control measures, including transmission-based precautions (airborne, droplet and contact precautions) with the recommended personal protective equipment (PPE) are necessary to minimise risks. Appropriate cleaning and decontamination of the environment is essential in preventing the spread of this virus.' [PHE, 2020]

Research published this year into human coronaviruses (HCoV) concludes they can persist on inanimate surfaces like metal, glass or plastic for up to 9 days. [Kampf, 2020] But they can be efficiently inactivated by good surface disinfectant procedures. It is essential that prior to disinfection, the initial cleaning stage is carried out effectively. Cleaning removes large numbers of microorganisms and this includes both the physical action of wiping and the use of a suitable detergent. Cleaning should always precede surface disinfection, especially of surfaces with visible contamination, as it helps to ensure the efficacy of the following disinfection stage. [Quinn, 2015]

Before considering the most appropriate surface disinfectants for managing COVID-19, it is worth noting that coronaviruses are classified as 'enveloped' viruses, whereas viruses such as rotavirus, or poliovirus are termed non-enveloped. Enveloped viruses have an envelope or outer coating which is needed by the virus to help it attach to the host cell. If this outer coating is destroyed, for example by a disinfectant, the virus cannot replicate.

This means that 'as coronaviruses have a lipid envelope, a wide range of disinfectants are effective.' [Sandle, 2020] Human coronaviruses can be efficiently inactivated by surface disinfection procedures with 62-71% ethanol, 0.5% hydrogen peroxide or 0.1% sodium hypochlorite within 1 minute. Other biocidal agents such as 0.05-0.2% benzalkonium chloride or 0.02% chlorhexidine digluconate are less effective. [Kampf G. 2020] A virucidal, ethanol-based disinfector/cleaner such as mikrozid liquid could play a useful role in the cleaning and disinfection of hard surfaces, particularly as it is effective against enveloped viruses within one minute (EN14476).

Hand hygiene

Hand hygiene precautions are also key in helping prevent the transmission of COVID-19. This is essential before and after all patient contact, removal of protective clothing and decontamination of the environment. 'Use soap and water to wash hands or an alcohol hand rub if hands are visibly clean.' [PHE, 2020] It is highly likely that this hand hygiene advice is already being followed by most dental practices, although it is worth checking that the hand hygiene gel being used is effective against enveloped viruses, as not all hygiene gels have similar efficacy. Also, that handwashing is performed correctly and for the recommended amount of time (a minimum of 20 seconds).

In conclusion, although there is justifiably widespread concern about the spread of COVID-19, at this time most patients presenting in primary dental care settings are unlikely to have COVID-19. Simple screening procedures should be undertaken to ensure that any at-risk patients avoid the practice while in self-isolation for two weeks. As no specific therapies are available for COVID-19, early containment and prevention of further spread is critical to control and contain this new coronavirus. Many of the measures recommended by Public Health England including cleaning and decontamination of surfaces, use of hand gels and personal protective equipment are already routinely in place in dentistry. With robust protocols and effective disinfectant products, UK dental practices are well placed to help prevent the spread of COVID-19.

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