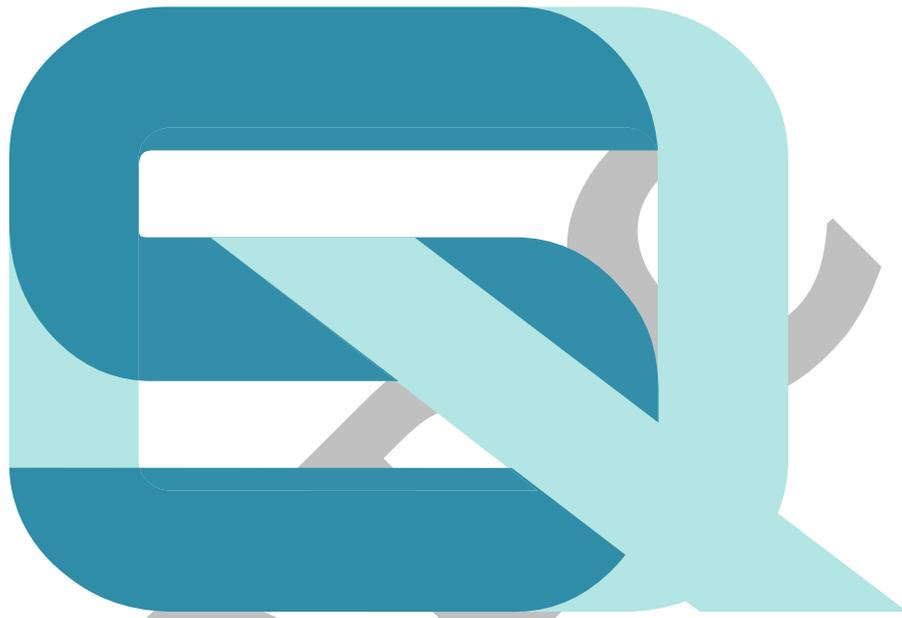


THE SQUARE ADVANCED DENTAL CARE

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THE SQUARE
advanced dental care

Post-COVID-19 re-opening - Standard Operating Procedures (SOP) and Risk Reduction Recommendations (RRR)

Version 1.1 – 4th June 2020

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The Square Advanced Dental Care

Post-COVID-19 re-opening - Standard Operating Procedures (SOP) and Risk Reduction Recommendations (RRR)

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1. Objectives of this document

- To provide a written reference document for our patients, colleagues and practice team outlining in detail all practice policy at SADC relating to reopening for routine patient care after the COVID-19 coronavirus world pandemic has started to subside in the UK.
- To collate as far as is possible all of the available evidence, key opinions and regulatory advice into one working document. Whilst covering all aspects in detail, we wish for this information to be as concise and easily referenceable as possible.
- To make clear our responsibilities and decision processes based on the above to provide a safe but pragmatic approach to reopening SADC to routine dental care as the pandemic numbers decline.
- This document supersedes all previous advice and position statements and versions will be updated.

For feedback or comments please contact me on riaz.yar@thesquaredental.com

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2. Introduction and background

- Coronaviruses are a large family of RNA viruses which may cause illnesses in animals or humans. They are known for causing respiratory infections ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) And Severe Acute Respiratory Syndrome (SARS).
- As early as November 2019, a new strain of coronavirus infection with a significant mortality rate was reported in the Wuhan province of China. Its source was unknown and thought to be a cross transmission from an animal, most likely an ingested bat.
- The disease was first reported to the World Health Organisation country office in China on 31 December 2019 and was classified as a Severe Acute Respiratory Syndrome due to infection by coronavirus 2 (SARS-CoV-2). It was declared a public health emergency of international concern on 30 January 2020.
- On 11 February 2020 the World Health Organisation named this new infection coronavirus disease 19 (COVID-19) to indicate the year in which it was discovered. (i.e. SARS-CoV-2 is the name of the virus; coronavirus disease 19, or COVID-19 is the name of the disease).
- COVID-19 was declared a pandemic by the World Health Organisation on 11th March 2020.
- During the time of writing there is only one known strain. The first virus isolate taken from the first recognised patient from Wuhan in December 2019 is the same strain as the most recent isolates taken anywhere else in the world in May 2020. (An isolate is the virus isolated from an infected patient. Whilst there may be minor differences in the genome of these viruses from patient to patient, they have not been proven to significantly change the behaviour of virus and as such are not regarded as separate strains amongst microbiologists. Whilst there are tens of discernible isolates, there still seems only to be one strain without significant change in behaviour since the first detected infection).
- During the time of writing there is no vaccine or approved medicine that is proven to be effective against COVID-19 though clinical trials are being conducted on various medication combinations.

- For the first time in our professional lives, it has been necessary to cease practicing routine dentistry for more than two months upon advice from our regulators.
- The COVID-19 coronavirus pandemic has had to lead to a complete rethink of whether and how our practice procedures need to be modified for the future.
- During the shutdown our profession has been caught up in a frenzy of activity, evaluating the sparse literature on this new disease and wondering whether we can extrapolate data from previous virulent respiratory viruses to help counter the effects of COVID- 19.
- Countless forums across a range of disciplines have been opened for colleagues to share their first-hand knowledge and many bodies both public and private have collated the most up-to-date information to produce a plethora of different standard operating procedure guidelines for model dental practice once we can return to work.
- This has been an ongoing exercise with sometimes hourly updates to advice. Frustratingly, the evidence and advice has sometimes been contradictory, open to interpretation and unclear in some areas.
- It is clear that for the most part we have a significant lack of long-term data as to how COVID-19 behaves. It is not clear why we see the vast range of presenting symptoms in patients from around the world that range from mild and barely detectable disease to significant morbidity and mortality in higher- risk groups.
- SADC acknowledges that as a healthcare provider and an employer we have a duty of care to the team and to our patients to ensure that the environment at SADC is safe to work in and that everybody is clear about the actions and procedures that have been put into place to protect everyone attending SADC from infection by coronavirus.
- This document has been created after having read as much of the available evidence as we are able and forms the basis of our policy at SADC to balance the dental needs of our patients with a pragmatic approach to reducing risk of cross infection between all persons that attend SADC.
- This document will be updated as required in light of developing advice and knowledge.

2.1. Current regulatory advice for dental practices in the UK

SADC accepts the following regulatory bodies as having ultimate control and influence over when and to what extent we are able to return to work. Most of these have issued guidance in relation to dental practice rather than absolute regulations.

A list of references for regulatory documents is available at the end of this document.

The Government of the United Kingdom and Public Health England

<https://www.gov.uk/coronavirus>

<https://coronavirus.data.gov.uk/>

<https://www.gov.uk/government/collections/coronavirus-COVID-19-list-of-guidance> <https://www.gov.uk/government/publications/COVID-19-management-of-exposed-healthcare-workers-and-patients-in-hospital-settings>

Office of the Chief Dental Officer of England (OCDO)

COVID-19 guidance and standing operating procedure - Delay phase

<https://www.england.nhs.uk/primary-care/dentistry/leading-the-change/>

<https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/04/C0282-COVID-19-urgent-dental-care-sop.pdf>

last updated 18 May 2020 at time of writing.

The General Dental Council

<https://www.gdc-uk.org/information-standards-guidance/COVID-19/COVID-19-latest-information/COVID-19-latest-guidance-for-england>

NHS England <https://www.england.nhs.uk/coronavirus/publication/preparedness-letters-for-dental-care/>

The Care Quality Commission (CQC)

<https://www.cqc.org.uk/guidance-providers/dentists> <https://www.cqc.org.uk/guidance-providers/dentists/current-position-dental-care-services-regarding-COVID-19-updates>

The Faculty of General Dental Practitioners (FGDP) <https://www.fgdp.org.uk/news/COVID-19-updated-guidance-and-resources-lockdown-eases>

<https://www.fgdp.org.uk/news/COVID-19-updated-guidance-and-resources-lockdown-eases#Aerosol%20Generating%20Procedures>

Dental Indemnity Companies: There are several but the three largest are listed.
DP (Dental Protection) <https://www.dentalprotection.org/coronavirus/coronavirus-faq---uk-specific> <https://www.dentalprotection.org/coronavirus/coronavirus-faq-dentolegal-and-clinical-guidance>

DDU (Dental Defence Union) <https://www.theddu.com/guidance-and-advice/latest-updates-and-advice/returning-to-practice-after-the-coronavirus-pandemic>

MDDUS (Medical and Dental Defence Union of Scotland) <https://www.mddus.com/coronavirus/dental-advice> <https://www.mddus.com/coronavirus/coronavirus-update/2020/may/COVID-19-mddus-dento-legal-advice-for-members-practising-in-england>

The British Dental Association

<https://bda.org/advice/Coronavirus/Pages/latest-updates.aspx>

Regulatory points and timeline of how coronavirus has affected dental practices in the private sector in the UK

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With so many regulators it has been challenging to decide which advice to follow. There has been incomplete and sometimes frankly contradictory guidance for private practices from multiple sources that are open to interpretation. A broad summary of events and our interpretation of the current situation and advice would be as follows:

- The Chief Dental Officer, currently Dr Sara Hurley, leads NHS England's dental team and provides professional and clinical leadership to Public Health England (PHE), the Department of Health (DH), Health Education England (HEE), The Care Quality Commission (CQC) and any other relevant departmental bodies.
- Whilst strictly speaking the Chief Dental Officer is an adviser to the government for commissioning in the NHS dental services, her position and advice has been referred to by almost all other regulators including the Care Quality Commission, The General Dental Council and the dental indemnity companies as well as the UK government to cover all dental services.
- It should be remembered that whilst dental care in the UK is often divided into private and NHS sectors, almost all dental practices are private businesses

owned by individuals or corporate bodies. This means that whilst a practice may be referred to as an NHS practice this means that it has a contract with the NHS for the provision of dental care for which it is remunerated by the NHS but it is not owned or controlled by the National Health Service.

- In view of the increasing scope of the pandemic, following consultation with our colleagues, staff and patients, the decision was taken to close LCIAD to routine patient treatments from 5.00pm on Monday 23rd March 2020. LCIAD has remained closed to all patient care but a few emergency treatments during this entire period.
- In the [third of a series of regular updates](#) to general dental practices and community dental services on 25th March 2020 (publications approval reference: 001559) the Chief Dental Officer for England Sara Hurley ordered all general dental practices and community dental services to stop all routine, non-urgent dental care including orthodontics until advised otherwise. Accordingly, the Chief Dental Officer's order that all routine face-to-face dental care should stop as of 25th March 2020 at the commencement of the national lockdown remains in force until specifically updated.
- However, this order to cease face-to-face dentistry for all practices other than urgent dental care centres (UDC's) set up within the NHS is at variance with the exclusions stated within the [Guidance for closing certain businesses and venues in England](#) produced by the Cabinet office and the Ministry of Housing, Communities & Local Government which indicates that dental services (alongside opticians, audiology services, chiropody, chiropractors, osteopaths and other medical or health services (including physiotherapy and podiatry services), and services relating to mental health as well as pharmacies and chemists, including non-dispensing pharmacies) were excluded from the order to close.
- The Chief Dental Officer for England Sara Hurley has not to date further clarified whether her advice should apply to both NHS and the private sector of dental care and has also not made the distinction between the two sectors when giving further advice.
- During a [webinar on 3rd April 2020](#), The Chief Dental Officer for England Sara Hurley confirmed that her advice did not apply to private practices, stating that any questions private practitioners had should be directed to the Department of Health for advice. However, the Department of Health has not

given any specific advice outside that given to the NHS to dental surgeries regarding guidelines for re-opening.

- The phrasing of the [COVID-19 guidance and standard operating procedure updated on 18th of May](#), suggests that the guidance is applicable to NHS England and the organisational operation of urgent dental care (UDC) and makes no reference to private practice. It acknowledges that this guidance is likely to be updated as the pandemic situation develops.
- All primary dental care services were asked to establish a remote urgent dental care (UDC) service. For LCIAD this consisted of information placed on our website and on our answer phones to ask patients who required urgent dental assistance to email or telephoning the practice in the event of an emergency. To date we have fortunately had very few incidences where urgent emergency care has been required, reflecting our attention to quality care in the past.
- Whilst UDC centres have been set up under the NHS, their locations are not made public and referral to them requires a complex triage and referral process via NHS email which most private practices do not have. Attempts at obtaining an NHS email by private practices have anecdotally proven to be laborious and in most cases unsuccessful. It is also our view that UDC's are not geared towards dealing with the scope of dental care offered at LCIAD and are largely providing advice, simple pain relief, extractions, temporary fillings and antibiotics as appropriate.
- The five-page, 11-step document [A Prompt to Prepare](#) dated 19th May 2020 from the Office of the Chief Dental Officer of England provided the framework for dental practices to consider when reopening, but offered no timetable.
- The Care Quality Commission issued the following on 20th May 2020 in response to a legal challenge by JFH Law that it did not have the authority to close down dental practices:

“The decision to offer dental care services is one for the provider to take.

Alongside guidance given by Public Health England (PHE) and the General Dental Council (GDC), CQC encourage dental providers to give proper consideration to the communications from the Chief Dental Officer (CDO) regardless of whether their practice is NHS, private, or mixed.

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CQC cannot require providers of dental care services to close, unless we find clear evidence of a breach of our regulations that requires consideration of the use of our powers under the Health and Social Care Act 2008 and associated regulations.

As part of our regulatory function we will assess the extent to which providers are providing an appropriate level of safety within the context of our regulations. In doing so we will refer to prevailing guidance, not limited to but including guidance from PHE, the CDO and GDC to help us reach a judgement on the extent to which the service currently being provided complies with our Regulations”.

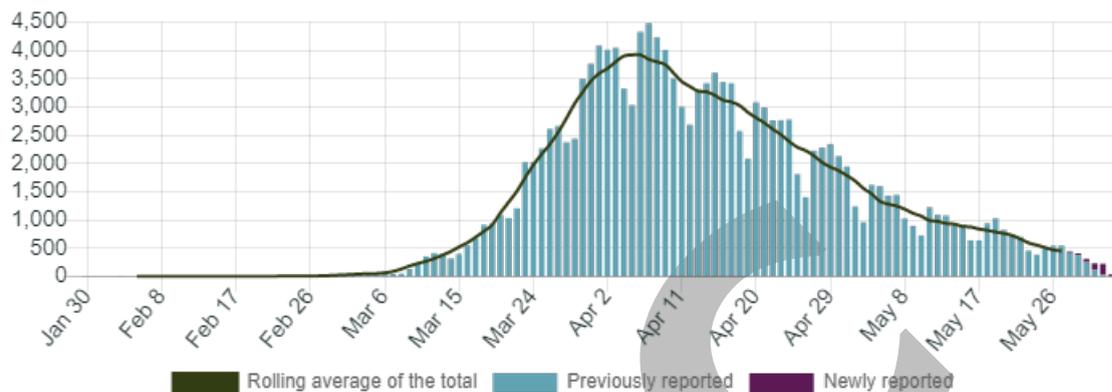
- A webinar by Julia Furley from JFH Law on 14th May 2020 regarding reopening of private practices from a legal point of view is available [here](#)
- The GDC issued the following statement on 21st May 2020 regarding its regulation and the decisions and judgement of individual practitioners:

“Expert advice on the clinical aspects of COVID-19 will continue to come from the health authorities of the four nations and we will continue ¹¹ to signpost to this guidance as and when it is updated. But that guidance will inevitably not cover every potential scenario, and therefore, dental professionals will need to continue exercising their professional judgement and weigh the risks in any given situation (our emphasis). They will also need to continue to assess whether they are trained, competent and indemnified to carry out the activity in question.

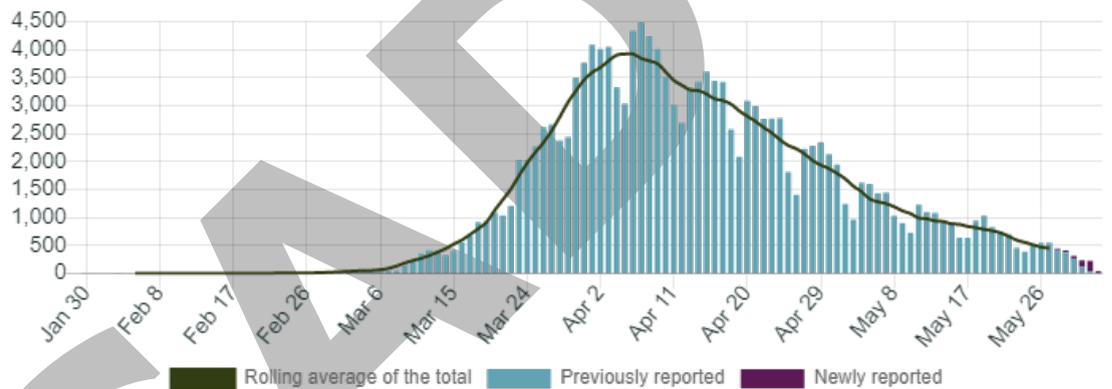
However, in the recent joint statement from the healthcare regulators we said that we understand that in highly challenging circumstances, professionals may need to depart from established procedures to care for patients and that should concerns be raised, relevant environmental and human factors would be taken into account.”

- On the day of updating (4th June 2020) according to <https://coronavirus.data.gov.uk/> there were 36 new laboratory-confirmed cases of confirmed infection in the UK and 359 deaths in the UK.

- The graphs below from <https://coronavirus.data.gov.uk/> on 31st May 2020 shows that the UK curve for the first wave of infection is diminishing at a steady rate.
- Daily number of lab confirmed cases in England by specimen date



- Daily additional COVID 19 associated UK deaths by date reported



- Current World Health Organisation global statistics can be seen [here](#) and shows a continued slow increase of global prevalence, with Europe as the only region with diminishing incidence.
- COVID-19 is still at “**alert level 4**” (out of 5) in the UK which indicates that it is still a disease with a severe risk of transmission. However, the R-number (the Reproduction number or the number of infected individuals infected by an infected patient) remains at 0.75 in England with the value lower in London than for the North East and Yorkshire.

- Following Prime Minister's briefing on 25th May 2020, it has been accepted that most shops and non-essential businesses in the UK will be able to commence a phased opening from 15th June. We feel that we are in a position to safely open for selected dental procedures before this date.
- On 28th of May, the Chief Dental Officer for England Sara Hurley And Director of Primary Care and System Transformation Matt Neligan released an [official document](#) (Publications approval reference: 001559) addressed to "Dental practices" and CC'd to "Regional dental commissioning leads" (not specifying whether this encompasses all dental practices or only those with NHS contracts). It stated that this correspondence "now sets out next steps for delivery of NHS dental services in England, as the NHS moves into the second phase of the COVID-19 response."
 - It goes on to state that "we have consensus on the commencement of reopening services. We support the full resumption of routine dental care, in a way that is safe, operationally deliverable and allows dental practices flexibility to do what is best for patients and their teams. Central to this is the acknowledged clinical judgement of practitioners and their ability to risk manage the delivery of dental care, as service provision is recommended"
 - It continues to acknowledge that clear safety standards including personal protective equipment (PPE) and infection prevention and control (IPC) protocols are required to safely deliver dental care as recommended by Public health England.
 - It states "Today, we are asking that **all dental practices commence opening from Monday 8th June for all face-to-face care**, where practices assess that they have the necessary IPC and PPE requirements in place"
- It is our view that as a leading, quality private dental practice with already the most stringent cross infection control procedures woven into our pre-COVID-19 standard operating procedures, we will be in a position to reopen the practice for patient care early in June with additional measures as listed later and throughout this document.
- We have given due consideration to the latest advice on 20th May and 28th May 2020 given by the Chief Dental Officer and feel that the cross-infection

control policies we have in place are easily on a par with or exceeding the requirements for the Urgent Care Centres.

- The Office of the Chief Dental officer has released a new Standard Operating procedure protocol on 5th June 2020.

SADC

3. Principles of our Risk Reduction Recommendations (RRR) and measures taken

- It is highly unlikely that COVID-19 will be eradicated as a disease for the foreseeable future. Like common cold or influenza viruses, the coronavirus responsible for COVID-19 will remain at large in the population to some extent.
- There is no currently accepted medication effective against the causative agent and it is likely that an effective vaccine is at least a year away. It would normally take approximately 4 to 5 years for an effective vaccine to be researched, formulated, produced, safety-tested and efficacy-tested and then brought to market. Therefore, even a year is likely to be an optimistic estimate though many laboratories around the world are working towards this target.
- It is highly unlikely that the current lockdown or similar restriction in social contact will be in force for this length of time until a vaccine or suitable targeted medication against SARS-CoV-2 will become readily available. The UK government is therefore proposing a phased reopening of venues over the next few weeks or months to allow the economy to resume functioning. The population will therefore gradually be exposed to this virus in the coming months.
- This means that there will always remain a risk that coronavirus infection can be contracted during normal day-to-day activity and it is impossible for LCIAD to control the environments in which our patients and staff circulate outside the practice. However, we can do a considerable amount to reduce the risk of exposure to this virus at LCIAD itself.
- There have been many suggestions to reduce risk and we have adopted as many of them as possible while still allowing us to carry out dental procedures to a high standard. We have also questioned and researched rationale behind advice given.
- We often read that many of these additional procedures have no evidence to support their efficacy in reduction of cross infection. However, absence of evidence is not necessarily evidence of absence, especially for a disease that is so new. We must keep an open mind and learn from similar outbreaks.
- True scientific evidence is sparse yet building. However, it is very difficult to produce clear scientific evidence where the study required to test a hypothesis

may be unethical. For example, a study to test if there is any difference between using:

- no mask,
- a conventional dental or medical tie surgical mask,
- an FFP2 mask,
- a non-fit tested FFP3 mask
- a fit-tested FFP3 mask
- a non-fit tested but same manufacturer FFP3 mask that previously passed a fit test but from a different batch a month later

on the cross-infection rates between known coronavirus carriers and uninfected individuals would be unethical to carry out. Therefore, it is extremely difficult to determine scientifically what the relative risks of transmission are between the different choices. Our advice is therefore having to be based on a multitude of sources that carry a reasonable academic weight in light of previous outbreaks but without necessarily having full scientific evidence.

- Our advice aims for the best possible combination of safety and practicality so that we can provide necessary dental care for our patients without increasing their risk of contracting coronavirus infection beyond that already present in the general population and indeed ideally providing a lower risk environment by controlling as many risk factors as possible within the practice.
- Research is continuing at a rapid pace and regular updates in our information and procedures will undoubtedly occur.
- Our view is that every little helps. Common sense dictates that anything that can help to reduce exposure of an individual to a potential source of infection should be adopted where the environment can be controlled.
- It is clear that we cannot completely eliminate all risk of infection absolutely and any risk of cross infection of coronavirus at the dental surgery will need to be weighed against the risks and benefits of not providing required dental treatment. To weigh up the balance of risks and whether to take this risk is entirely at the discretion of the individual patient attending the clinic.
- Our starting point is the list of the government's basic social distancing and personal precaution guidelines on <https://www.gov.uk/coronavirus> which all team members and patients should be familiar with and comply with for day to day protection.

- Further measures specifically custom written for SADC are listed below in more detail but are based around:
 - risk assessment of our entire team prior to commencing reopening
 - pre-appointment triaging of risk levels for individual patients
 - reduction in incidences of contact between staff and patients as far as possible
 - reduction in risk of transmission whilst on SADC premises.
- Many of the protocols that provide safety to patients and staff alike at SADC are already in place and are tried and tested over the years. A dental practice is one of the best controlled and cleanest environments alongside operating theatres and food production facilities.
- We are regulated by an array of professional bodies and guidance documents as indicated in this document and with which we must keep up to date as part of our compliance to maintain an up to date and safe dental practice.
- Whilst this may seem like an onerous document to plod through, please be assured that it is the culmination of many days of work and consideration and will hopefully relay to the reader that we take this issue seriously.

4. Practice preparation and team training period (26th May to 3rd June 2020)

- Dr Riaz Yar, Clinical Director of SADC is the lead for the implementation of the post-COVID-9 Standard Operating Procedures. Jeanette Harrison is lead nurse responsible for implementation of aspects related to dental nursing.
- A "staff member" means all persons that have their regular place of work at LCIAD as either an employee or self-employed clinician.
- All staff have self-assessed and continue to be assessed for their COVID-19 risk both at work and at home with instructions to report any changes in risk level.
- Between 26th May and 3rd June 2020, the entire practice was spring cleaned and disinfected by SADC staff (with appropriate social distancing based on personal assessment of risk) from top to bottom including removal of all non-essential items, removal of all objects from drawers and cupboards and interior cleaning and disinfection and wiping of all surfaces inside and outside the surgeries.
- Replacement of suction motor HEPA (high efficiency particulate absorbing) filters in each surgery to filter exhaust air from dental suction units has been completed for 3rd June prior to opening.
- Legionella testing which is also due as per routine practice protocols will also be carried out in accordance with [HTM 01-05](#), [HTM 04-01 part 2 \(2014\)](#), and [Approved Code of Practice \(ACOP\) L8 \(2013\)](#).
- Staff meetings have been utilised to go over this document, provide collective feedback and brainstorming and agreed changes made to the updated version of this document.
- Orders for every item of new and replacement equipment and consumables required by new regulations after COVID-19 reopening have been identified and ordered as early as possible in as much quantity as may be required to ensure continuity of supply and safety of all individuals at SADC after re- opening.

1. RRR and SOP training and confirmation of understanding - role play and step by step staff training

It was important that all practice steps in this document were practiced before implementation. These steps were rigorously tested and revised by all staff prior to re-opening to ensure all processes run smoothly. This gave us important information as below:

- an idea of the practicalities of the recommendations
- a time-and-motion study of patient care and flow through the practice under the new recommendations
- required modifications to procedures to adapt to the recommendations
- ironing out issues in the protocols and finding solutions where issues present themselves.
- assessment of additional time and costs involved with additional procedures to build into the business plan of the practice to ensure viability
- refining and where possible simplifying the protocols as required
- seeking and obtaining qualified third-party advice where uncertainties in protocols remained after collective discussions with all staff.
- SADC has been in constant touch with team members via WhatsApp group ¹⁹ during the entire lockdown period between 24th March and the last week of May. We have maintained morale with each other and ensured that everybody feels supported and has a forum to openly discuss concerns.
- Before the reopening the team has been involved in open discussions as a group and in subgroups and all concerns and questions about reopening have been addressed to our fullest ability.
- The clinical director has acknowledged that there are concerns about returning to work and a myriad of unknowns and unknowables that we have had to try to systematically address over the last few weeks.
- The staff have been assured of the rationale for re-opening and all precautions that are being taken to maintain the safety of staff, patients and indeed anyone that has day-to-day dealings with SADC as comprehensively as we are able.
- The option of continuing furlough until the government alert status is reduced has been given to those staff members that wish to take advantage of it and this has been taken up by at least one staff member to date.

2. Confirmation of standard infection control procedures ([HTM 01-05](#)) plus supplemental post-COVID 19 risk-reduction modifications

- All standard pre-COVID-19 standard infection control processes as outlined under [Health Technical Memorandum 01-05 \(HTM 01-05\): decontamination in primary care dental practices](#) will remain in force as before lockdown.
- SADC is also aware of and has incorporated aspects of "[COVID-19: infection prevention and control guidance](#)" for additional aspects and current guidelines over and above HTM 01-05.
- Our regular decontamination, cleaning and sterilisation procedures already have a proven track record of being effective at prevention of cross infection of previous respiratory and blood-borne viruses.
- These procedures, already second nature to our team, will continue to be used until superseded by any modifications that may come into force following the pandemic.

Zoning

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The following zones will be set up:

- **Entry zone** – up to metal bar of entry doormat and across entrance to waiting room large enough for property box to be placed. For deliveries, patient greeting, verbal update of medical history with standardised questions, temperature measurement, collection of patient property to place in plastic box, hand hygiene alcohol handrub for 30 seconds, donning mask and gown and hat before entering the practice.
- **Patient waiting zones** away from doffing zones with table for masks and hand sanitiser
 - Entrance door – seating area if weather is poor outside
 - Entrance upstairs corridor 2 metres from stairs
 - Waiting area inside with 2 metres distancing chairs

3. Hand and respiratory hygiene

- All persons entering and leaving SADC should thoroughly wash their hands in one of the surgery scrub sinks as soon as they arrive at the practice.
- Handwashing should follow standard pre-operative techniques used routinely before surgery to include forearms. All sinks will have step-by-step images of the ideal handwashing process and videos are available at <https://www.nhs.uk/live-well/healthy-body/best-way-to-wash-your-hands/>.
- Hands should be washed at every reasonable opportunity with antibacterial hand soap provided and especially at the following times:
 - Immediately before attending to patient treatment and donning personal protective equipment (PPE)
 - After any activity that may lead to hands becoming contaminated such as opening doors, receiving packages, typing on keyboards, before and after eating etc.
 - After removal of PPE before leaving surgery
 - After equipment decontamination in the sterilisation room before leaving the sterilisation room.
 - After handling and disposal of waste
 - At the start and end of every clinical session
 - Always after using the toilet facilities
- Alcohol based hand rub should be used adjunctively for 30 seconds after each handwashing session allowing access to all of the same surfaces of the hands and wrists as during handwashing
- Respiratory hygiene should follow the principle of “**catch it, bin it, kill it**”. Tissues are available in all areas of the practice and should be used to sneeze or cough into when required. The tissue should then be immediately discarded into the nearest bin and hands and face washed and decontaminated as above.
- If you need to sneeze or cough, please make every effort to distance yourself from anyone in close proximity by at least 2 metres and turn away to direct the cough or sneeze onto a tissue and away from any individual. If no tissue is immediately available, please catch in the crook of your elbow and ensure that your skin or clothing covering this area is washed as soon as possible.

4. Staff clothing (non-clinical)

- All staff at SADC should refrain from wearing any jewellery in the form of rings, necklaces, earrings or piercings in the facial region. The only exception are small stud earrings to prevent closure of pierced ears and plain wedding bands which should be removed at the start of each day and kept safe in the staff member's locker after decontamination with alcohol hand gel disinfectant.
- The practice alarm panel should be covered in clingfilm by the last person to leave in the evenings (instructions extended to cleaning services) and the alarm activated through the clingfilm.
- The first person to arrive at and unlock the practice should turn off the alarm through the clingfilm and then remove the clingfilm and proceed directly to the nearest handwashing sink as soon as the alarm has been turned off but before touching any light switches. The clingfilm should be turned inside out and immediately disposed of in clinical waste in the new clinical waste pedal bin by the entrance door. Upon washing their hands and using alcohol handrub, they should return to the alarm panel, decontaminate the surface with suitable alcohol wipes and close the alarm panel cover. They should only then turn on all lights and equipment / electricals in the practice as normal.
- The same person should unlock the staff room staff room door and the SADC WhatsApp message the rest of the practice to say that the staff room entrance is open.
- Staff should shower each morning and wear clean and ideally easily washable clothes to work each day and proceed directly to the staff room where they should wash their hands and faces as above after having removed any wedding ring and prior to changing into work scrubs.
- Hands should be dried on disposable paper towels in clinical and common areas. Tea towels from the kitchen or other non-disposable fabric items must not be used.
- All handbags and personal property must be placed directly into staff room upon arrival at the practice and not left on surfaces around the practice at any time. No outside personal property or outdoor clothing should be placed onto the staff room dining table or worktops or kitchen worktops at any time.
- Street clothes should be regarded as contaminated from exposure on public transport and stored folded. Street clothes must not be worn anywhere in the practice other than the staff room and staff should change into SADC uniform

scrubs immediately upon entering practice and after washing hands at nearest free sink.

- Shoes must be stored in the shoe lockers and not left anywhere else. Staff should change immediately from their street shoes into their Crocs clinical footwear as soon as possible after entering the practice.
- Lunch should be brought in sealed Tupperware containers and left in the fridge after hands have been washed. Staff should try to limit exiting the practice for lunch or other activities as far as possible during the day to reduce risks of carrying infection in either direction.
- Mobile phones should be switched off completely and left in staff lockers provided with all other personal property and should only be used during break and lunch periods after having thoroughly washed and disinfected hands. They must under no circumstances be brought into clinical areas at any time.
- Scrub uniforms or dedicated practice clothing should be worn by all staff including administrative staff during working hours. Further clinical PPE measures are outlined below. Scrub uniforms must never be worn outside the practice other than in the practice quadrangle and must not come into contact with street clothing.
- Scrub uniforms should be placed directly into the clinical laundry baskets in the staff room at the end of each day (or each session if soiled) and street clothes donned immediately prior to leaving the practice. Clinical scrubs should not be left anywhere.
- If scrubs need to be removed to exit the practice during the day, they can be stored over lunch hour in the personalised washable bags provided which should also be laundered at the end of the clinical day.
- Used work scrubs should be put on the most suitable wash cycle for the fabric at the end of each working day or immediately at the start of the following day having been stored in the provided laundry bins overnight. Hands should be washed, and the washing machine surfaces wiped down with surface disinfectant after this process.
- Work shoes / clogs / Crocs should be sprayed with surface disinfectant or machine washed with scrubs if appropriate.
- Street clothes should be removed and washed as soon as you return home and a similar protocol to the practice adopted for handwashing and antimicrobial

alcohol hand rubs when arriving home after work. All staff should ideally shower as soon as you return home.

- Avoid touching your face at all times when changing outside donning and removing mask, eye protection and visor PPE.

5. Practice risk assessment and updated checklists

- Updated practice risk assessments have been prepared by the Practice Manager and Senior Nurse. All staff should familiarise themselves with these documents during the staff training days.
- All staff should complete and submit the Health Questionnaire and have their temperature taken daily.
- All staff must continually risk assess their environment and take tactical measures to ensure safety depending on traffic and events throughout the practice.

SADC

6. Changes to non-clinical patient and common areas

- Nonclinical patient areas are defined as:
 - The practice entrance hallway
 - The corridor
 - The bathroom
 - The treatment coordinator room
 - The staircase landing and corridor
- The common areas for SADC staff only are defined as
 - The PM office
 - The staffroom
 - The kitchen
- No personal protective equipment that has been worn in the surgeries or decontamination and sterilisation room should be worn in the non-clinical patient²⁵ and common areas.
- All non-essential items should be removed from common areas and all desk clutter reduced to a minimum by storing little-used items in drawers or Really Useful Boxes in the vaults for the time being. These include:
 - Magazines, books and brochures
 - All paper / files / stationery
 - All objects and containers that can be stored in cupboards or drawers
- All staff must endeavour at all times to keep all areas clean and tidy and consider where items are left and the risk that they may pose to cross infection protocols.
- No beverage facilities will be available for patients for the time being, with our apologies.
- The waiting room will ideally be used for the minimum amount of time, if at all – patients should ideally be able to go directly to the dental surgery as soon as they arrive at the practice and be able to leave directly after their procedure. However, the waiting room will be available as a temporary waiting area if arrival or departure of patients happened to coincide despite staggered diary planning. There will be sufficient space for patients to remain at least 2 m apart if more than one person needs to use the reception area, but it is unlikely that this will be required, and we will plan to avoid it.
- Information on COVID-19 and the protective and preventive measures we have adopted at SADC for the safety of all who attend SADC must be displayed. This document will be available on our website and sent to patients, staff and colleagues for information.

- Disposable tissues and waste bins as well as alcohol hand rub stations must be available in each non-clinical area including:
 - Entrance and reception
 - Entry and ground floor corridor
 - Bathrooms
 - Kitchen
 - Staff room
 - Patient co-ordinator office
 - Management office
- An hourly rota for cleaning and disinfection of all communal areas has been devised and will be in force especially for often-touched areas such as door handles using proprietary surface cleaners. This is the responsibility of the greeting and runner nurse as below and a log will be kept of all cleaning times.

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7. Changes to surgeries / operatories

- All clinical and disinfection and sterilisation areas are normally subject to sessional, daily, weekly and monthly hygiene routines. These will be reinstated as normal prior to surgery opening and continue with our normal high standards as per [HTM01-05](#) procedures.
- All surgeries and operatories have been cleaned by:
 - removal of all objects from inside cupboards and drawers,
 - discarding of all expired equipment and materials,
 - surface disinfection of the insides of the cupboards and drawers and surfaces of all items
 - packing away of all non-essential or rarely-used items into lidded boxes which are stored within the vaults of the practice.
- All chair water lines have been fully run through and disinfected with hydrogen peroxide or [hypochlorous acid \(HOCl\)](#) solution as appropriate for the manufacturer. This will be repeated immediately prior to reopening and as per our normal [HTM 01-05](#) procedures at the end of each patient treatment session. SADC has been using Sterilox HOCl solution for nearly 8 years in our dental chairs. We have ordered further equipment to increase production for use in disinfection of the whole practice.
- All non-essential items from worktops have been removed and placed into

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8. Changes to decontamination and sterilisation room

- Similarly, to the operatories, the contents and interiors of all cupboards and drawers have been sorted, cleaned and disinfected in the same way.
- All ultrasonic baths, washer disinfectors, autoclaves, purified water and [hypochlorous acid \(HOCl\)](#) production machinery will be thoroughly cleaned, put through at least three test cycles and serviced where required to ensure that they are cleaned, disinfected and fit for purpose immediately before opening.

9. PPE definitions, aerosol-generating or non-aerosol-generating procedures (AGP and non-AGP), standard, FFP2 and FFP3 masks, fit testing of masks, staff PPE requirements, donning and removal of PPE training

PPE Definitions

- **PPE** is the acronym for **Personal Protective Equipment** and is defined as any item that is worn by a healthcare worker or indeed any person for the purposes of protecting the user against health and safety risks.
- In this context it includes additional precautions that may reduce the risk of cross infection of coronavirus, the causative agent of SARS COVID-19 to those normally used in primary dental care such as face masks or respirators, eye protection, visors and surgical gowns and hoods.
- The question of personal protective equipment is highly topical and also presents the greatest challenge for dental practices that plan to reopen due to a global level of demand which far outstrips supply especially for higher level protection. We regard personal protective equipment as the following:
 - **Work scrubs** made of high temperature washable polycotton as basic uniform within the practice for both clinical and, from 1st June, also non-clinical staff.
 - **Suitable respirator** (Respiratory Protective Equipment or RPE) matched to the risk level of the patient and the procedure and certified fit tested by qualified fit tester where appropriate.
 - Respirators contain multiple layers of fine filters that not only physically trap tiny droplets and particles but are also electrostatically charged to attract particles to be caught within the mesh of the filters rather than allowing them to pass through unimpeded.
 - Respirators are classified as “**filtering face piece**” **respiratory protective equipment (RPE) - FFP1, FFP2 or FFP3** and can be **valved** or **un-valved**.

- **FFP1** - standard surgical face mask loop or tied. Protection against large solid particles or droplets with a minimum filter efficiency of 78%.
- **FFP2** - protection against solid and liquid aerosols with minimum filter efficiency of 92% to 95%
- **FFP3** - protection against solid and liquid potentially toxic aerosols with a minimum filter efficiency of 98% to 99% when fit-tested.

Valved versus non-valved –

- Valved masks protect the wearer from aerosol generated from the patient but allows exhalation of unfiltered air to escape through the valve. i.e. it is protective in one direction only by protecting the wearer i.e. the healthcare worker from the patient. It makes wearing the mask more comfortable but does not prevent cross infection from the wearer to other people.
 - Un-valved masks protect both the wearer and anyone close to them from aerosol by filtering inhaled and exhaled breath equally in both directions, i.e. both the healthcare worker and the patient are protected from each other. However, they are considerably more uncomfortable to wear especially for prolonged periods and in hotter environments.
 - It should be noted that valved respirators are not fully fluid resistant unless they are also “**shrouded**” where the valve is covered by additional fabric to protect it from splatter or aerosol or is protected by a second standard surgical mask for the same purpose.
-
- **Eye protection** against direct splatter and aerosol compatible with magnifying loupes and coaxial lights vital for the practice of fine dentistry.
 - **Face visors** to complement eye and facial protection from direct splatter and reduce aerosol and direct splatter contamination of eye protection and loupes.
 - **Hair nets or surgical hoods** to reduce aerosol and direct splatter contamination of hair and exposed forehead skin.
 - **Disposable or washable water-resistant gowns** to reduce aerosol and direct splatter contamination of working scrub suits and exposed forearm skin.
 - **Plastic aprons and heavy-duty gloves** during the decontamination and sterilisation processes outside the surgery.

- SADC is of the opinion that shoe covers do not add any further protection from a respiratory virus. It is unlikely that the presence of any particles that have settled to the floor are likely to be kicked up into an aerosol or droplet form after settling and shoe covers would also not prevent this.
- The action of placing shoe covers introduces additional risk of patients touching a potentially more contaminated part of their attire than they normally would (i.e. the soles of one's footwear) and may also increase the risk of losing balance or leading to slipping or falls for more elderly or infirm patients. It will also create a substantial amount of additional unjustified plastic waste. We have therefore not included additional foot covers in our PPE list after suitable risk assessment but will continue with normal established daily floor decontamination and disinfection routines to maintain a hygienic floor environment as far as possible in the practice.

Fit testing of respirators

- FFP2 and FFP3 respirators come in a variety of designs, shapes and sizes and consequently, in the UK, these need to be fit tested by law by a registered fit tester to ensure that they maintain a proper seal during normal movements for any given individual. All of our staff have been through fit testing prior to return to work by Dakatra in compliance with Health and Safety Executive guidance found here:
 - <https://www.hse.gov.uk/respiratory-protective-equipment/fit-testing-basics.htm>
 - <https://www.hse.gov.uk/pubns/indg479.htm>

Important statement:

At the time of writing there is a global shortage of reputable, CE-marked and quality-checked FFP3 respirators. Recognised high standard FFP3 respirators by companies such as 3M or Uvex are simply unobtainable in adequate quantities to most small practices due to all reputable suppliers being out of stock until well into the autumn. The earliest delivery we are able to obtain for FFP3 non-valved 3M products for which we have not even been able to be fit tested yet is 1st October from [Arco](#).

- The FFP3 valved products available to us are:
 - SOLVAY 3030VPLUS – We have ordered and maintain a stock – cost per mask is £6.50. All the team have been fit tested.

- We have also ordered as much varied PPE as possible including protective hoods with positive pressure airflow, visors, gowns, hoods and protective glasses of varying designs to allow for fitting across all body types in the practice.
- Governments, larger health organisations and large buying groups have tied up most stock with bulk order purchases primarily for the National Health Service but to which the private dental sector in the UK has extremely limited access. Requests for contracts for supply of NHS stock to SADC have been turned down through we acknowledge some assistance in the shape of a handful of PPE3 masks for one procedure.
- A multitude of websites have sprung up selling FFP2 and FFP3 stock and our inboxes are filled daily with multiple advertisements. However, experience and substantial wasted money has shown that this stock is often not as advertised, delivery dates are inaccurate, and the items once received have been shown not to be those ordered.
- We have therefore learned the hard way that great care is required to purchase these products from reputable and established providers within the dental, medical and protective workwear industries. It is no coincidence that all of the reputable providers are having substantial problems procuring adequate stocks required by the dental and medical professions in this country. Therefore, newly established suppliers that claim to have large stocks of quality CE marked products which are often sold at substantial mark-ups should be approached with caution and with the expectation that the product advertised is not necessarily fit for purpose and may indeed in some cases never actually arrive.
- Whilst our regulators have indicated that dental practices can open with "suitable" or "appropriate" PPE in the form of respirators, they are fully aware that this will not be possible for the vast majority of both private and NHS dental practices who will require substantial stocks of consistent quality fit-tested FFP2 and FFP3 respirators that are simply not available.
- In the absence of availability of personal protective equipment, SADC will follow the guidance set out by Public Health England on [Considerations for acute personal protective equipment \(PPE\) shortages](#) updated on 21 May 2020 for the various items.

Fit testing for religious groups

- Until 2nd June, no guidance or advice had been received from any of our regulators regarding the impossibility of providing a positive fit-test on Sikh, Jewish and Muslim colleagues who have beards for religious reasons. However the [British Dental Association Toolkit](#) published on 2nd June following consultation with the Sikh Dental Association has stated:

“Where, for cultural, religious or health reasons facial hair is present which will affect the seal of FFP2/3 masks, practices should consider as an alternative, the use of an FFP2 mask with a Type II fluid resistant surgical mask over the borders, in conjunction with a face shield/visor. A thorough risk assessment needs to be implemented at a local level if this suggestion is adopted.

*Another alternative is the use of a **powered air purifying respirator (PAPR) hood.** This does not require any fit testing...”.*

- Many colleagues have been in a genuine quandary as to whether to close shave against their religious beliefs to comply with fit testing regulations in the UK. Such regulations are not required in Europe and there does not seem to be any evidence of increased infection rates as a result of this process not being carried out.
- However, it is required by law in the UK and our colleagues obviously want to do the correct thing, but this represents a substantial personal sacrifice when the role of FFP2 and FFP3 masks in the prevention of COVID 19 cross infection control have not been firmly established. In these cases, full face respirators may be advisable and required. However, these, too, are hard to procure.
- The Health and Safety Executive have stated that there are alternatives to fit tested FFP3 masks if there are religious reasons for the presence of facial hair but have not made any recommendations as to what these might be in their [Guidance on respiratory protective equipment \(RPE\) fit testing](#). We understand via a personal communication that the Sikh Council has prompted the Health and Safety Executive for a detailed response to proposed alternatives.

Current recommended PPE for primary dental care

- The current Recommended Personal Protective Equipment for primary, outpatient, community and social care by setting, NHS and independent sector in the UK endorsed by Public Health England, The Academy of Medical Royal Colleges, Public Health Wales, Health Protection Scotland, Public Health Agency and the National Health Service is given in the table below (please click image for hyperlink to full PDF document).

Setting	Context	Disposable Gloves	Disposable Plastic Apron	Disposable fluid/repellent coverall/gown	Surgical mask	Fluid-resistant (Type IIR) surgical mask	Filtering face piece respirator	Eye/face protection ¹
Any setting	Performing an aerosol generating procedure ² on a possible or confirmed case ³	✓ single use ⁴	✗	✓ single use ⁴	✗	✗	✓ single use ⁴	✓ single use ⁴
Primary care, ambulatory care, and other non emergency outpatient and other clinical settings e.g. optometry, dental, maternity, mental health	Direct patient care – possible or confirmed case(s) ³ (within 2 metres)	✓ single use ⁴	✓ single use ⁴	✗	✗	✓ single or sessional use ^{4,5}	✗	✓ single or sessional use ^{4,5}
	Working in reception/communal area with possible or confirmed case(s) ³ and unable to maintain 2 metres social distance ⁶	✗	✗	✗	✗	✓ sessional use ⁵	✗	✗
Individuals own home (current place of residence)	Direct care to any member of the household where any member of the household is a possible or confirmed case ^{3,7}	✓ single use ⁴	✓ single use ⁴	✗	✗	✓ single or sessional use ^{4,5}	✗	✓ risk assess single or sessional use ^{4,5,8}
	Direct care or visit to any individuals in the extremely vulnerable group or where a member of the household is within the extremely vulnerable group undergoing shielding ⁹	✓ single use ⁴	✓ single use ⁴	✗	✓ single use ⁴	✗	✗	✗
	Home birth where any member of the household is a possible or confirmed case ^{3,7}	✓ single use ⁴	✓ single use ⁴	✓ single use ⁴	✗	✓ single or sessional use ^{4,5}	✗	✓ single or sessional use ^{4,5}
Community and social care, care home, mental health inpatients and other overnight care facilities e.g. learning disability, hospices, prison healthcare	Facility with possible or confirmed case(s) ³ – and direct resident care (within 2 metres)	✓ single use ⁴	✓ single use ⁴	✗	✗	✓ sessional use ⁵	✗	risk assess sessional use ^{4,6}
Any setting	Collection of nasopharyngeal swab(s)	✓ single use ⁴	✓ single or sessional use ^{4,5}	✗	✗	✓ single or sessional use ^{4,5}	✗	✓ single or sessional use ^{4,5}

Table 2

1. This may be single or reusable face/eye protection/full face visor or goggles.
 2. The list of aerosol generating procedures (AGPs) is included in section 8.1 at: www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/covid-19-personal-protective-equipment-appe. (Note APGs are undergoing a further review at present)
 3. A case is any individual meeting case definition for a possible or confirmed case: <https://www.gov.uk/government/publications/wuhan-novel-coronavirus-initial-investigation-of-possible-cases/investigation-and-initial-clinical-management-of-possible-cases-of-wuhan-novel-coronavirus-w-n-cov-infection>
 4. Single use refers to disposal of PPE or decontamination of reusable items e.g. eye protection or respirator, after each patient and/or following completion of a procedure, task, or session; dispose or decontaminate reusable items after each patient contact as per Standard Infection Control Precautions (SICPs).
 5. A single session refers to a period of time where a health care worker is undertaking duties in a specific care setting/exposure environment e.g. on a ward round; providing ongoing care for inpatients. A session ends when the health care worker leaves the care setting/exposure environment. Sessional use should always be risk assessed and considered where there are high rates of hospital cases. PPE should be disposed of after each session or earlier if damaged, soiled, or uncomfortable.
 6. Non clinical staff should maintain 2m social distancing, through marking out a controlled distance; sessional use should always be risk assessed and considered where there are high rates of community cases.
 7. Initial risk assessment should take place by phone prior to entering the premises or at 2 metres social distance on entering, where the health or social care worker assesses that an individual is symptomatic with suspected/confirmed cases appropriate PPE should be put on prior to providing care.
 8. Risk assessed use refers to utilising PPE when there is an anticipated/likely risk of contamination with spit/sneeze, droplets or blood or body fluids.
 9. For explanation of shielding and definition of extremely vulnerable groups see guidance: <https://www.gov.uk/government/publications/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19>

- It is our view that it is impossible to know without clinical testing whether any of our patients or indeed staff are infected with coronavirus. Whilst we will go through a screening procedure as detailed below for both staff and patients before they commence work and attend the practice, it is entirely possible that anyone can

become infected with coronavirus on the way to the practice or in the 72 hours prior to attending after having completed their updated Medical And Dental Questionnaire.

- It is therefore our policy at SADC that all patients are treated as being possibly infected and all procedures regarded as aerosol generating, though to different degrees. This is supported by the recent [document by the British Association of Oral and Maxillofacial Surgeons](#).
- This means that the following PPE will be used for all operative dentistry procedures:
 - Single-use disposable gloves with double gloving to make safe doffing of PPE easier at the end of each procedure
 - Single-use disposable fluid repellent coverall or gown (or high-temperature washable equivalent)
 - A filtering face piece respirator conforming to fit-tested FFP3 for all operative dentistry or FFP2 for the following procedures which we regard as lower risk though still not by any means completely aerosol and droplet-free:
 - dental consultations and examinations
 - removal of sutures
 - fitting of removable dental appliances such as whitening trays, occlusal deprogramming devices, fitting of orthodontic retainers and dentures
- The following advice has been published on 4th June 2020 by the Office of the Chief Dental Officer of England and SADC will be following this policy:

“All respirators should:

- *be well fitted, covering both nose and mouth*
- *be specifically fit-tested and fit-checked for the specific make and model of the respirator on all staff undertaking AGPs to ensure an adequate seal/fit according to the manufacturers’ guidance*
- *be fit-checked (according to the manufacturers’ guidance) by staff every time a respirator is donned to ensure an adequate seal has been achieved*
- *not be allowed to dangle around the neck of the wearer after or between each use*
- *not be touched once donned*
- *be compatible with other facial protection used such as protective eyewear so that this does not interfere with the seal of the respiratory protection nor functionality of loupes or lights*

- *be disposed of and replaced if breathing becomes difficult, the respirator is damaged or distorted, the respirator becomes obviously contaminated by respiratory secretions or other body fluids, or if a proper face fit cannot be maintained.*
- *be removed outside the dental surgery where AGPs have been generated in line with the doffing protocol*
- *be worn with a full-face visor if a non-fluid resistant respirator is used. (Noting that valved respirators are not fully fluid-resistant unless they are also 'shrouded').*
- *cleaned according to manufacturer's instructions if re-usable*

FFP3 (filtering 98% of airborne particles) respirators are advised for all AGPs to prevent inhalation of aerosols. This is because FFP3 respirators offer a slightly higher level of protection than FFP2 respirators and advice aims to offer the greatest protection.

However, the Health and Safety Executive has stated that FFP2 and N95 respirators (filtering at least 94% and 95% of airborne particles respectively) offer protection against COVID-19 and so may be used if FFP3 respirators are not available. These respirators offer protection against AGPs, are recommended by the World Health Organization and are used routinely in other countries by dentists for AGPs. All respirators need to be fit tested and checked.”

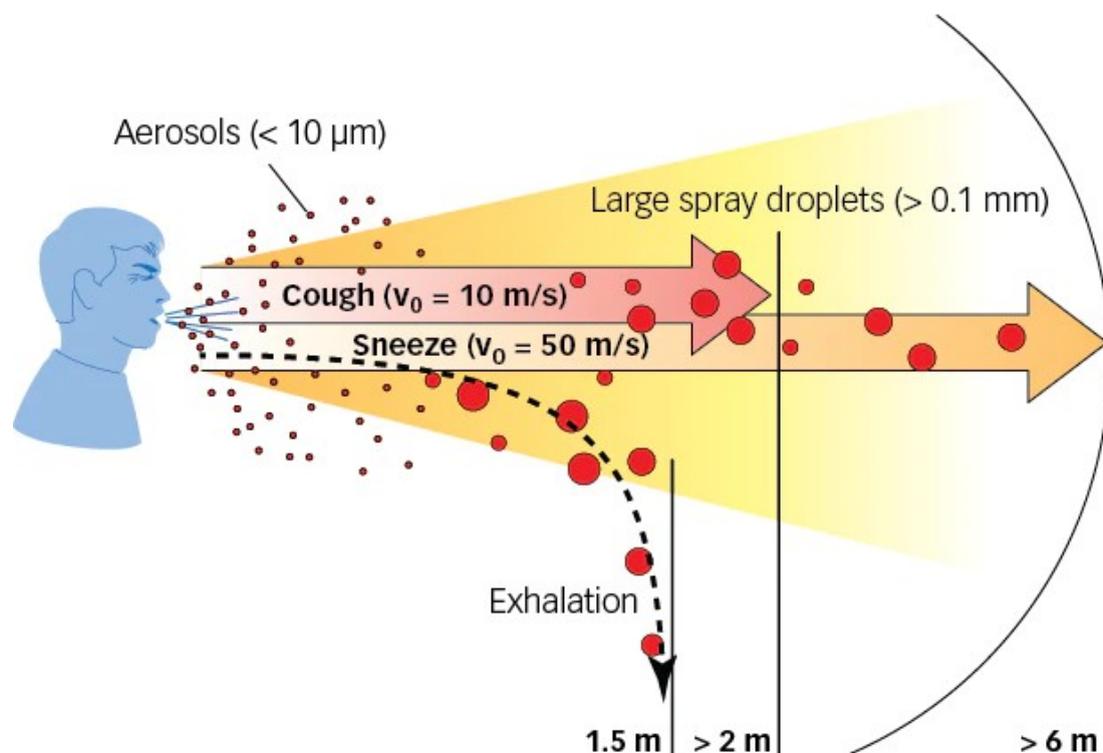
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Aerosol-generating or non-aerosol-generating procedures (AGP and non-AGP)

There has been much discussion about whether and which procedures generate aerosol and which procedures do not generate aerosol. This discussion has several facets that require some thought:

- **Droplet size.** Viruses are not transmitted on their own but normally within water droplets from the host carrying the virus. These droplets may be a spectrum of sizes, large and visible or tiny and invisible to the naked eye.
- The larger the particle, the more it behaves as a projectile – a large droplet produced during a sneeze, for example, will be projected based on the force used to create it and gradually arc to the floor. The extent of this arc for exhalation is normally around 1.5 m. Hence the 2-metre social distancing rule to reduce the risk of these droplets landing on and being inhaled by another person which is called “**airborne transmission**”.

- However, it can be seen from the diagram below that large spray droplets from a cough or a sneeze can extend to up to 6m whereas aerosols tend to be confined to less than 1.5 m through direct projection.



- These droplets can also land on objects and stay alive long enough to be picked up by touch and transferred via direct contact to the mucous membranes of the mouth, nose or eyes. This is so called “**contact transmission**”.
- To reduce the risk of contact transmission, we are asked to sneeze into a tissue (“**catch it, bin it kill it**”) directed away from others and also told to wash and disinfect hands regularly in case we have touched a surface that harbours virus from a previous persons’ droplets that can then be passed to the mouth or nose or eyes by touch.
- Coronavirus can survive for:
 - 72 hours on plastic and stainless-steel surfaces
 - 24 hours on cardboard surfaces
 - 9 hours on copper surfaces
 - 3 hours in suspended aerosols

- Items that harbour and allow contact transmission are known as **fomites** – a fomite may be any object on which the virus can live for long enough to be transmitted by contact transmission.
- The presence of aerosol droplets on their own is not enough to cause infection. If it were, then the dental and medical literature would have far greater numbers of papers alluding to the possibility that dental practices are a high risk of cross infection through aerosol. Despite the *apparent* risk it is evident that dental surgeries are not in fact centres for disease transmission due to aerosol even with normal personal protective equipment use daily throughout dental practices around the world. It is critical to recognise this fact in the current climate.
- To transmit the virus requires a viral load and a suitable host whose immune system is not strong enough to fight this viral load. i.e. the number of virus particles within a droplet. It appears that patients with severe manifestations of COVID-19 can have up to 60 times the viral load on nasopharyngeal swabs than those patients with a mild form of disease (Verity R, Okell LC, Dorigatti I, et al. Estimates of the severity of coronavirus disease 2019: a model-based analysis. *Lancet Infect Dis*. Published online March 30, 2020. doi:[10.1016/S1473-3099\(20\)30243-7](https://doi.org/10.1016/S1473-3099(20)30243-7)). Therefore, it appears that asymptomatic patients may carry a lower viral load and contribute less of a viral load as aerosol than patients exhibiting overt symptoms.
- Viral load can be dramatically diminished by using either 5% peroxide or 0.5% or 1% povidone-iodine solution as a mouthwash, gargle and nasal spray prior to dental procedures. Either of these will reduce virus replication approximately 10,000-fold.
- Smaller particles produced by breathing and sneezing tend to stay suspended in the air for some time and can be inhaled or can land on objects further away that are then touched by another person. This is what is normally referred to as **aerosol**.
- Patients (and indeed staff) breathing, talking, coughing and sneezing produce droplets and aerosol in the form of many sizes of droplet. **Therefore a “non-aerosol generating procedure”, or “non-AGP” procedure does not exist as far as we are concerned.** Every individual produces droplets and aerosol. It is more a question of degree of exposure, how much viral load is introduced into the air directly by the patient’s mouth or respiratory tract, the form of this viral load whether it is in droplet or aerosol form and time of exposure.
- It is assumed that aerosol produced during dental procedures is a vehicle for transmission of coronavirus and that creation of an aerosol will cause infection or increase infection rates. This assumption is not necessarily true – it depends on

where the aerosol comes from and what it is made up of and how many virus particles are contained within it. e.g. one cough-generated droplet may contain more virus than a large aerosol made up mainly of [hypochlorous acid \(HOCl\)](#) which is a virucidal solution used in dental chair lines and as a coolant during so-called dental aerosol-generating procedures (AGP's).

- It is assumed that the definition of a medical AGP is the same as a dental AGP. The aerosol composition differs considerably even amongst medical AGPs: for instance, certain medical AGPs such as anaesthetic intubation in theatre generate aerosols by inducing the patient to cough. It has been shown that coughing emits up to 1,000 times the number of droplets compared to normal breathing and intubation was a significant risk of SARS CoV-1 transmission to health care workers during the last coronavirus outbreak.
- Conversely, aerosol production via ventilation or nebuliser treatment did not increase transmission risk.
- Dental aerosols have been studied for many years. The tissues and fluids of the oral cavity contain many bacteria and viruses that are contained in the aerosol generated in everyday dental procedures. Indeed, we daily treat patients with undiagnosed potential tuberculosis, HIV, human papilloma virus, herpes virus hepatitis B, SARS COVID-1, influenza A (H1N1 and H3N2), common colds from rhinoviruses, respiratory syncytial virus, other coronaviruses, adenoviruses and Coxsackie viruses, Epstein Barr virus and many hundreds of bacterial species that live within the oral and pharyngeal cavities. However, presence of these microorganisms in aerosol is not in itself an indicator of infective capacity.
- Whilst there are multiple references that dental aerosol does contain microorganisms from the oral cavity, **that there is no evidence in the literature that general dental aerosol has resulted in the infection of dental healthcare workers or their patients in any centre or with any disease.** Were dental aerosols a significant transmitter of airborne pathogens, this would surely have come to light. The paucity and almost lack of publications in the extensive dental and medical literature on the subject suggests that whilst it is theoretically a high risk activity, dental aerosol does not in fact appear to be a significant source of bacterial or viral cross infection when one considers the millions of aerosol producing dental procedures that are carried out every year in this country let alone the rest of the world.
- In summary, it is our professional opinion that the aerosol generated in dental practice through dental operative procedures is formed mainly of treated water containing potent virucidal components such as [hypochlorous acid \(HOCl\)](#) or

other proprietary antibacterial and antiviral chemicals placed to protect dental water lines from bacterial and viral contamination. The aerosol produced from the patient's mouth during dental operative procedures is therefore substantially diluted and formed mainly of clean water with a virucidal activity and is not, in our opinion, from the paucity of evidence over many years, a major risk or source of cross infection of infective agents between patients and dental healthcare professionals.

The bacterial load carried by the aerosol created during dental procedures is also substantially reduced by preoperative mouth rinses, gargles and nasal sprays and the use of dental dam which is already part of our routine as seen below. Thus, we feel that the risk of transmission by dental aerosols in dental practices is the same or even less than the risk outside the surgery, despite the fact that bacteria and viruses are still detectable within these aerosols.

Staff Requirements

Despite the above viewpoint, it is in the interest of all of our staff and patients and our profession that everyone attending SADC is kept as safe as possible with a belt and braces approach.

All staff at SADC are required to wear personal protective equipment depending on the environment in which they work and the procedures that they are expected to carry out.

This list is modified from our normal procedures and should be adopted upon reopening of SADC on 8th June as planned. It is based on the document [COVID 19: guidance and standing operating procedure - Delay phase 18 May 2020](#)

All staff should comply with the recommendations under item 4.4 upon arrival at the practice.

- SADC polycotton scrubs or similar machine washable practice attire to be worn only within the practice at SADC.
- Normal surgical face masks to be worn in common areas where social distancing is not possible, changed at least every 1½ hours. No mask is

required if alone in a room or if social distancing is possible within the same room as a colleague.

- **Front office staff** - receptionist Chloe Adams and Jill Rank
 - Machine washable practice attire to be worn only within the practice.
 - Normal surgical face masks to be worn in common areas where social distancing is not possible, changed at least every 1½ hours. A mask is still required even if social distancing is possible within the same room as a or patient.

- **Patient greeting and escort/runner nurse.** This nurse will be responsible for greeting of patients that arrive at the practice, going through patient arrival protocols and escorting the patient to the appropriate surgery directly upon arrival at the practice. This nurse will also be responsible for disinfecting common areas after passage of patients to and from the surgeries. This nurse should not enter operative areas and should be the only nurse wearing full protective gear in common areas. PPE may be removed and placed in a dedicated lidded container when there are likely to be extended periods of time between patient arrival and departure to the practice. This practice member will be responsible for providing enough time to re-don PPE in time for patient departure or patient arrival at the practice. Further details are listed under item 7 below. 40

 - SADC polycotton scrubs, protective water-resistant gown, FFP2 mask, visor, nitrile gloves, hairnet, Crocs clinical footwear

- **Clinical staff including dental surgeons, hygienist/therapist and assisting dental nurses within the surgeries.**
 - SADC polycotton scrubs, protective water-resistant gown, single use FFP2 or fitted FFP3 masks depending on procedure (see below), multiple use disinfectable safety goggles or spectacles (normal loupes for clinical operators), multiple use disinfectable or disposable visor, nitrile or latex single-use disposable gloves double-gloved, single use hairnet or surgeon hat depending on hair length and Crocs clinical footwear.

Donning and removal of PPE training for staff at SADC

As a clinic that regularly carries out surgical procedures, all of our clinical staff are trained and proficient in sterile gown and draping as it is a daily activity within the practice. However, we acknowledge the requirements for additional checks and protocols in addition to our normal daily routine as below.

- Putting on and removing (donning and doffing) of personal protective equipment so that contaminated surfaces are contained within removed gloves, gowns, hoods and disposable visors immediately prior to disposal in clinical waste bags for incineration and good hand hygiene before and after this process is already part and parcel of our daily work.
- However, additional training has also been received during fit testing of our FFP3 respirators to revise the procedure to ensure that contaminated surfaces are not allowed to come into contact with clean surfaces or be the source of cross infection following patient procedures.

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We will be following the following guidelines:

NHS / Public Health England / Health and Safety Executive

- [Prepare and protect - putting on \(donning\) and removing \(doffing\) personal protective equipment \(PPE\)](#)
- [Putting on \(donning\) of PPE](#)
- [Removal \(doffing\) of PPE](#)

5. Pre-appointment booking / confirmation procedures for patients

- Upon reopening, SADC will be responsible for prioritising patient attendances at SADC based on infection risk versus clinical need. We will prioritise patients who require urgent attention or who were undergoing current treatment phases abandoned after 23rd March and where further delay may result in significant deterioration of their dental condition.
- We would ask patients with non-urgent problems or requiring check-up appointments to please be patient and await appointments towards the end of the summer.
- The most effective way of reducing risk of cross infection between individuals attending SADC is to assess relative risks and recent past experience and ensure those attending SADC are low risk.
- All of our staff will be asked to complete a COVID – Return to work questionnaire which will also confirm that they have read, understood and agree to abide by this SADC Standard Operating Procedure (SOP) and Risk Reduction Recommendations (RRR) dated 1st June as well as asking for their recent experience and exposure to potential infection. 43

1. Patient risk groups.

- The NHS has provided a list of patients who are at **high risk** (clinically extremely vulnerable) and at **moderate risk** (clinically vulnerable) of COVID-19 and potential sequelae. Please [refer to this list](#) to assess if you are at risk and try to defer your dental appointment until the end of the summer if your dental condition does not require immediate attention.
- For patients who are in one of these risk groups but still require urgent dental attention please do contact the practice and we will make arrangements to alleviate your emergency in the safest possible way.

2. Medical and Dental Questionnaire (MDQ) completion

- All patients to SADC are already asked to complete a comprehensive medical and dental questionnaire. This MDQ must be updated every time the patient attends SADC. Our current system now allows the existing form data to be recalled and edited only where circumstances have changed rather than having

to re-complete the entire form each time. We know that this will be a relief for all of our patients who hate filling in forms every time they attend.

- We have added a further section at the start of the MDQ regarding assessment of COVID-19 risk. **All patients who have not previously completed the new MDQ which came into force on first of November 2019 will be asked to complete this form at least three working days prior to any appointment being confirmed. We must respectfully insist that this is carried out without fail.**
- Please note that we reserve the right to decline to book appointments or to postpone appointments if the fully completed MDQ is not returned in time or we feel that you are at high risk of having been exposed to coronavirus in the last 2 to 3 weeks.
- Our receptionist Chloe Adams or Jill Rank will guide you through the questionnaire by telephone or Zoom meeting if you have difficulties.

3. Individual patient screening / risk assessment and prioritisation of patients

- Upon receipt of a patient's completed or updated MDQ, the clinician involved with their care will make an assessment of COVID-19 risk versus dental needs priority and advise reception and patient coordination as to the level of risk and urgency.
- Patients will be classed as high, medium or low COVID-19 risk or as already having been infected and recovered pending proof of documentation. A copy of such documentation should be emailed to Info@thesquaredental.com For your records.
- Patients will then be classed as high, medium or low priority in terms of the requirement for their immediate dental care.
- The clinician will then make an assessment of the balance between these two risks to prioritise available appointments. For example, a low COVID-19 risk patient with a high dental priority will receive an appointment before a high COVID-19 risk patient with medium dental priority.
- Patients with high or medium COVID-19 risk will normally be asked to self-isolate and refrain from attending the practice for at least three weeks before they are asked to update and resubmit their MDQ prior to requesting a new dental appointment.

- Patient bookings will be made into the diary based on a new staggered diary control system to reduce contact between patients arriving and leaving the practice and allow for longer periods between appointments.
- Where possible we will be seeing only one or maximum two patients per session per surgery for dental treatment or a maximum of three patients per session for dental hygiene and minimal aerosol generating procedures.

4. Patient communication/ phone or video contact / patient consent

- The processes for patient communication, consultation, reporting and consent will continue as normal. Further information can be found on our website www.thesquaredental.com
- It is likely that we will make more use of video consultations, especially to answer patient questions or go over treatment reports and phases of treatment which we would normally do face-to-face at the practice. Our reception team Jill Rank will arrange for Zoom or telephone meetings where required.

5. Diary management and changes to scheduling

The following changes will be introduced into the diary management system for SADC from 8th June which will be our first "soft-opening" day after lockdown:

- The diaries for the four surgeries will commence with 15 minutes staggered start times at the beginning of the day. This is to ensure that patients arriving for dental appointments can be greeted in isolation without other patients also being present.
- All minimally aerosol generating procedures as listed below will have an additional 15-minute buffer period introduced after the appointment. This will cover the following procedures and there will be no charge for this additional 15 minutes of time:
 - dental consultations and examinations
 - removal of sutures
 - fitting of removable dental appliances such as whitening trays, occlusal deprogramming devices, fitting of orthodontic retainers and dentures

THE SQUARE ADVANCED DENTAL CARE

- All other procedures including hygiene visits and all operative dental procedures will have an additional 30-minute buffer period introduced after the appointment. No additional charge will be made for the 30-minute buffer period after hygiene appointments. However, operative appointments outside dental hygiene will automatically be extended by 30 minutes and a normal fee for this time will be charged. I.e. a two-hour appointment will be extended to a 2 ½ hour appointment and charged at hourly rate for 2 ½ hours.
- This 30 minutes for obvious aerosol generating procedures is to allow settling of aerosol which will be assisted by introduction of WINIX PLASMA AIR PURIFIERS into each surgery as well as the entrance hall/reception area and the decontamination and sterilisation room. These units will be left on around-the-clock to effectively remove aerosols and kill any bacteria and viruses within the aerosol using a very high voltage electrostatic field contained within the machine. They provide a numerical value on a clear display on the machine for air purity which will be monitored throughout the day.
- SADC is not increasing its normal hourly rate fees for the time being but will be faced with substantial time and additional PPE costs to accommodate post-COVID-19 changes for patient safety. We have calculated that this arrangement appears to be the fairest to ensure that we are able to make the required safety changes and still remain financially viable even though it will lead to a substantial reduction in available treatment time over the course of the next six months to one year. However, it is likely that unless procedures return to normal with the reduction of global COVID-19 cases over the next year, increases in fees will inevitably be necessary to compensate for the additional material costs and increased downtime required to maintain patient safety.

6. Appointment bookings and treatment slots

- SADC is already a practice whose protocols are based on efficient full mouth dental care. Rather than seeing multiple patients per day for short procedures, we tend to have longer half day or full day appointments to maximise efficiency and control of the cases we treat.
- Therefore, for patients requiring multiple procedures, we will strongly recommend that longer appointments to get multiple procedures completed as far as is possible be prioritised. This is not a great change from what we normally do.
- Our receptionist team will inform you of the available treatment times required for your particular case and

we would be most grateful if you could follow their lead and allow them to arrange your appointments as most appropriate for your case at the times they recommend. Your flexibility on this subject to allow SADC to maintain social distancing between patients and keep a tight control of diary times will be most appreciated.

7. Changes to payment methods

- SADC already works by a system where each treatment phase is paid in advance. This will not change and will continue as normal.
- Appointments that are normally paid at the front desk on the day of the appointment such as for hygiene visits, examination appointments and occasional treatment will need to be paid in advance when the appointment is booked and no later than three days prior to the appointment at the same time as submission of the patient is completed or updated Medical and Dental Questionnaire (MDQ).
- We would be grateful for your cooperation in ensuring that all fees are paid in advance prior to attending for your appointment. This is to reduce the need for use of payment terminals and prolonged time spent at reception before or after your appointment.

6. Travelling to the practice

We should be most grateful to all of our patients to consider the following points before coming for your appointment. Please note that all of these are measures taken to minimise the risks of transmission at SADC as far as possible. They are logical precautions and should not worry you unduly in their stringency.

1. Preparations by patients

Three days before your appointment

- Please ensure that your Medical Questionnaire is completed at least three full working days prior to your appointment. If you have already completed our new MDQ introduced after 1st November 2019, you will be sent a link to your existing data for you to simply update any additional questions or changes and resubmit your existing data. Please be sure to indicate if you feel that you are at any risk of having been exposed to a patient with COVID-19 in the last three weeks.
- You will be invoiced for your visit prior to arrival. We should be grateful if you could pay the invoice for this visit at the same time as completing your medical and dental questionnaire.
- If you have not already done so, please try to procure a personal facemask that you can wear to the surgery on the day of your appointment.
- You will not be permitted to bring your mobile phone into the surgery on the day of your appointment. Please ensure that your diary is clear and that you will not be expecting any telephone calls or need to be contactable during your appointment time.

On the day of your appointment

- Please let us know immediately on 0161 980 9730 if you have developed any symptoms or have come into contact with anybody that may have COVID-19 in the 72 hours since completing your medical and dental questionnaire or if you feel in any way unwell.
- Please shower and wear clean, light and easily washable clothing that has not been worn elsewhere. We will recommend that this clothing is washed immediately after you get home.

- You should arrange to go directly home from the practice and not visit anyone.
- Please do not wear heavy make-up or jewellery. Small stud earrings and a wedding band are acceptable but please minimise all make-up and jewellery as much as possible.
- Please tie your hair back if you have long hair.
- Please ensure that you have thoroughly brushed your teeth as normal before attending and that your mouth is as clean as possible.
- Please minimise what you bring to the practice - for example shopping bags.
- If you do not have one you will be provided with a complimentary disposable normal surgical mask when leaving the practice which you should wear until you reach home.
- Please be well hydrated but do not over-drink water or fluids. There will be complimentary bottled water at the practice for you as we will have decommissioned our normal water cooler and removed it from the waiting room.
- Please visit the bathroom before you set out.

2. Transport

- We strongly recommend to patients and staff alike to reduce the risk of COVID-19 infection by avoiding public transport wherever possible. If you're obliged to use public transport, please find the best rated mask that you are able to get hold of and wear at all times from leaving home until arriving at the practice. Try to maintain social distancing of at least 2m at all times. We appreciate that this may not be easy or indeed possible.
- If possible, please drive to the practice in your own vehicle and park using the car park.
- If it is not possible for you to drive in your own vehicle then please ask someone with whom you have been isolated to drive you and pick you up afterwards.
- If this is not possible then we would recommend taking a black cab or other cab company such as Addison Lee which has installed a Perspex shield or similar

between the passenger and driver compartments. We would recommend booking the same driver to return home at the end of your appointment if possible, to reduce the number of people to whom you are exposed travelling to and from the practice.

3. Accompanying patient escorts

- If you are being accompanied by an escort, partner or carer, please be aware that they will not be permitted to wait at the practice and should be prepared to drop you off at the door and return to accompany you at the end of your appointment time. Please inform our receptionist and patient coordinator if you will be arriving at the practice with an accompanying person.
- Children and pets should under no circumstances be brought to the practice and should be left with suitable carers. We regret that we are unable to accommodate or look after children or pets especially in the current circumstances.

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Upon arriving at the practice and patient traffic management

It is our objective that by staggering diary start times and allowing buffer time between appointments, we will minimise the chances of patients coming into close proximity with other patients at the practice and hopefully eliminate this altogether.

1. Procedures prior to entering the practice

We have started the following protocols for patients arriving at the practice:

- Please complete any telephone calls that you need to make before entering the practice and switch off your mobile phone and put it safely in your bag or pocket before you ring the practice bell. You will not be permitted to take your mobile phone into the surgery.
- We will ask you to remain outside the practice until it is time for your appointment. Please do not arrive too early but approximately five minutes before your appointment is due. If it is raining you will be able to stand under the front alcove away from the rain. Our reception will call you on your mobile when we are ready for you.
- After you ring the practice doorbell and are allowed in you will be met at the upstairs entrance by one of our meet-and-greet nurses. They will be in full PPE so please do not be surprised.

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2. Procedures upon entering the practice and personal property

- Your temperature will be taken using a remote contactless temperature sensor. If your temperature is above 37.8°C over three consecutive attempts, you will not be permitted to enter the building and we will request that you rebook your appointment for at least three weeks later.
- You will be asked again verbally to confirm that there are no changes to your COVID-19 status since completing your medical and dental questionnaire three days before. If your temperature is below 37.8 and you have not exhibited any of the symptoms associated with coronavirus infection in the last three days, you will be admitted for your appointment.
- (If you have an elevated temperature or have developed one or more of the COVID 19 symptoms on our medical and dental questionnaire (MDQ) we would strongly recommend that you self-isolate and inform those around you that you may have COVID-19. Please let your GP know and click on the link here to initiate a [test and trace.](#))
- If an escort is due to pick you up at the end of your appointment, please let reception know their mobile number and we will call them near to the end of your appointment for them to be ready to collect you.
- You will be given hand sanitiser to rub into your hands for at least 30 seconds.
- You will also have the option of wearing nitrile gloves if you choose though this is optional. We have opted not to give foot covers for reasons stated earlier in this document.
- Our meet and greet nurse will accompany you to the dental surgery directly without stopping in the waiting room and hand you over to your dental surgeon and his or her nurse in the surgery.
- If you have chosen not to wear gloves, we will ask you to thoroughly wash your hands for 30 seconds with antibacterial soap provided using the hand washing guide above the scrub sink in each surgery.
- We will then ask you to use a 1.5% Hydrogen Peroxide solution as a mouthwash for 30 seconds, gargle for 30 seconds. (Please note that the Hydrogen Peroxide used should not create any irritation or adverse effects.

- You will then be ready to commence normal dental appointment as arranged.
- Should you wish to visit the bathroom during your appointment, we will ask you to slip out of your gloves, re-disinfect your hands with alcohol gel and don new gloves when you return.

3. Procedures before leaving the practice

At the end of your appointment, we would like you to be able to leave the practice directly without having to visit reception unless payment hasn't been taken for any reason.

- If someone is due to pick you up, we will give reception notice to call them in good time to be able to arrive at the practice towards the end of your appointment. They will not be permitted to enter the practice but should arrange to meet you outside the front door at the allotted time.
- The nurse in the surgery will guide you through removal of your gloves as you exit the surgery and will collect them from you for disposal.
- You will be given a new clean surgical mask to wear home if you do not already have one.

4. Follow up contacts

- Reception will give you your usual TLC follow-up call either later the same day or the following day as we normally do after operative procedures.
- Where required, further appointments can then be arranged via telephone or email.
- Please note that the same process starting with the updating of your medical and dental questionnaire will repeat for your next appointment and all of the steps above will apply for your next appointment as well.

7. Dental surgery / operator protocols

SADC already has strict dental surgery and operator protocols as part of its day-to-day functioning. These will continue as normal.

However, in addition we will be introducing the following protocols whilst the Covid-19 pandemic is still at significant levels in the UK.

1. Aerosol generating procedures (AGPs)

- SADC would reiterate that we regard all patient contact generates some level of droplet or aerosol production.
- Our normal dental suction removes over 90% of aerosol generated during dental procedures.
- If patients and staff are at lower risk of exposure to SARS-CoV-2 based on pre-attendance questionnaires and maintenance of social distancing and self-monitoring, we maintain that there is scant evidence to suggest that aerosol generated by dental instrumentation in any way increase the risk of viral transmission. The references given at the end of this Standard Operating Procedure document referred to potential risk of aerosol-borne infection from dental procedures but have documented no such confirmed case.
- However, to mitigate any potential risk we will have adopted at least TYPE 2R and wherever possible FFP3 fit tested non-valved respirators as well as face visors, hair nets and protective waterproof gowns plus eye protection as normal.
- It should be remembered that most of the aerosol produced by dental instrumentation will be virucidal and have a diluting effect on droplets and on any aerosol from the patient. This will include 10% hydrogen peroxide-based (H₂O₂) and [hypochlorous acid \(HOCl\)](#)-based solutions which are safe for ingestion but are potently virucidal.
- Air-conditioning units will operate normally and have recently been serviced. There is no evidence to suggest that well-maintained air conditioning units harbour or transmit the virus. However, airborne transmission does seem to be associated with areas of greater presence of particles in the air such as in polluted or smoggy atmosphere.

- Immediately after each operative procedure, the surgery will be vacated and the WINIX unit turned to its maximum setting, (also windows are open throughout, this will allow for a constant flow of air and no negative pressure.) This will draw in and particle-purify and decontaminate the surgery air and kill any aerosol-borne microorganisms with the door of the surgery closed for at least 20 minutes. We have called this the **aerosol settling and air purification period (ASAPP)**. All airborne aerosol droplets should either then have hit the floor or been drawn through the WINIX purifier.

2. Operatory preparation protocols

Normal surgery preparation at the start of each day and at the end of each session will continue as normal as per our established protocols based on HTM 01-05 protocols and standard protocols for running through and disinfection of dental water lines.

- All non-essential items have been removed from the surgeries and placed into cupboards or into storage.
- All treatment is planned well in advance and any laboratory work that has been received from the laboratory will have been processed as under item 10 below.
- All items to be used for a procedure should be prepared in advance on the worktop to avoid having to open drawers or cupboards during operative procedures.
- A dedicated plastic box should be prepared just outside the clinical area on the worktop for immersion of all clinical instruments in enzyme cleaner with detergent to prevent drying out of soiled instruments at the end of a procedure so that they can be left soaking during aerosol settling and air purification period after each operative session
- All computers and other equipment that cannot be removed should be covered with disinfected or disposable covers such as polythene for items such as the operating microscope and HIFU machine and disposable clingfilm for computers and photographic and video cameras.

- Small items stored in trays within the drawers such as suction tips, three and one tips, impression mixing nozzles etc should also be covered over by disposable clingfilm at the start of every session and the clingfilm disposed of at the end of every session to ensure that aerosol does not land into the drawers and cupboards.
- The operatory nurse should not leave the surgery during treatment and should, similarly to the patient, be well hydrated and have visited the bathroom prior to donning PPE for that session.
- Nobody should enter the surgery where patient treatment is continuing without donning suitable PPE even if it is for only a very short period. Similarly, the PPE should be removed upon exiting the surgery. All nurses and clinicians should ensure that they have everything they need and should not need to enter another surgery during a procedure.

3. Clinical protocols

Following a full clinical assessment, we have found very little to change in our normal clinical protocols. It is our opinion that differentiating between aerosol generating and non-aerosol generating procedures is not realistic and has no scientific basis when considering risk of cross infection. It is not realistic to open the dental practice and expect to be able to treat patients without generation of aerosol droplets in one form or another. This is therefore a relative risk that has to be faced when a dental practice is in operation.

However, the following points should be considered when treating patients:

- Rubber dam should be used for all restorative operative procedures as normal. This is already something that is carried out at SADC as routine.
- The spittoon tap should be turned on prior to patients rinsing to reduce the amount of droplet or aerosol deflected from the spittoon. The number of times a patient needs to rinse should be minimised to reduce droplets and spatter. We do not feel it is realistic to stop patients rinsing entirely but they should be made aware of the need to minimise this activity.
- High-volume suction with or without additional saliva ejector should be used for all procedures including use of piezon.

- Water flow to the piezon and handpieces should not be reduced in an attempt to reduce aerosol. This would have the following effects:
 - reduction in virucidal and bactericidal dilution
 - greater tendency for overheating and therefore patient discomfort or even pulpal damage when drilling
 - reduction in efficiency of cleaning or drilling which prolongs the procedure and therefore the exposure time.

It is therefore advised that coolant water is turned up to its full extent as we would normally do.

- Excellent airway protection to reduce the chances of patients coughing or sneezing during the procedure should be insured as always.

8. Post-treatment protocols, decontamination and sterilisation

- As soon as the patient has completed treatment, the assisting nurse should guide the patient through how to doff their PPE at the exit to the surgery and ask them to go directly to the nearest bathroom to wash and disinfect their hands. The patient's PPE should be gathered from the outside in by the assisting nurse and placed into the clinical waste bin in the surgery.
- The assisting nurse should maintain all of their current PPE and remain in the surgery for the moment but socially distant from the patient once the patient's PPE has been removed.
- The dental surgeon should remove their outer gloves only remembering that the remainder of their PPE remains contaminated.
- The patient should leave the surgery directly to the bathroom to wash their hands. They should then be asked to move onto the blue sign on the floor of the corridor next to the mask and hand sanitiser station at least 2 metres away from the doffing zone marked outside the surgery, wearing only their normal street clothes and asked to wait. The runner/greeting nurse should direct them to disinfect their hands and don a standard loop or tie mask straight away and ensure that the patient positions it so that it covers the mouth and nose.
- The dental surgeon should immediately doff all personal protective equipment into the clinical waste pedal bin.

- The clinician should then also wash and dry hands again.
- The patient should then be asked by the greeting nurse to move towards reception whilst maintaining social distance of 2m.
- The patient are then free to leave the practice and should be guided out maintaining social distancing with a smile and cheery goodbye acknowledging with some humour the slight absurdity (but still serious necessity) of all of these precautionary measures.
- The runner/greeting nurse should then wipe down the exit door handle inside and outside the front door and also the entry phone button and grille by the front door. The wipes and disposable gloves should be immediately disposed in clinical waste.
- In the meantime, in the surgery, the surgery nurse should immerse any soiled instruments in their respective cassettes into the plastic box with enzyme cleaner and detergent for the aerosol settling period and then also have removed her outergloves.
- She should turn the WINIX level up to maximum before leaving the surgery and closing the door behind her. (Alternatively, turning up the WINIX level to maximum can be done at the start of the procedure if the surgery occupants do not mind the additional fan noise produced by the WINIX working at a higher level during the procedure). This should in theory reduce the length of time required to process the air in the room at the end of the session.
- An **aerosol settling and air purification period (ASAPP)** of at least 20 minutes with the WINIX working at maximum (10 minutes for “non-AGP” procedures) should then be allowed with the surgery door closed whilst the assisting nurse has a break outside the surgery or carries out any duties in the sterilising room.
- The dental nurse should then also carry out the same doffing / and mask donning procedure as the clinician that has left the surgery before her.
- The runner / greeting nurse should place a “no entry” sign on the door to indicate that this is now a no entry zone and a clock with a 20-minute alarm set on the door to indicate how much time has elapsed (10 minutes for minimal AGP procedures). It should be remembered that these 20 minutes are in addition to any time elapsed from the last aerosol generating dental activity ceasing during the treatment session, during which time aerosol and particle

settling will have already started.

- The runner/greeter nurse and the assistant nurse are responsible for ensuring that bathroom facilities are fully disinfected after each use.
- The dental surgeon should then use this time to write up contemporaneous notes, write up lab dockets, check emails, optimise, name and tag photographs from the previous session or day and carry out all the administrative tasks required by standard SADC protocols. This is still regarded as an integral part of the patient's appointment.
- After each treatment session, the surgery nurse will then prepare to re-enter the operatory 10 minutes before the next patient is due. She will don new PPE plus plastic apron and heavy duty gloves and wipe down all surfaces using regular proprietary antimicrobial cleaning solution (as defined below under "Sterilising room procedure" section) and wipes, changing and replenishing as required, starting at high level and working downwards to include the following in order.
 - All clinical items to be decontaminated and sterilised to be placed into a lidded lockable box (Really Useful box) normally stored in the sterilisation room and brought to the surgery by the runner/patient greeting nurse at the end of the session.
 - Any small items or material containers or equipment to be put away at the end of the procedure (e.g. Implant motor, endodontic motor, dental loupes etc) removing all clingfilm on items such as computers and cameras with the contaminated surface being collected inwards and the clingfilm discarded into clinical waste.
 - Light, camera and light arm on the dental chair
 - Dental chair bracket table and arm
 - Handpiece motors and cabling
 - Nurses station and spittoon
 - Dental chair and base and foot pedals
 - Clinician and dental nurse tools
 - Wall cabinet façades and handles, work surfaces and base cabinet façades and handles
 - Alcohol and soap dispensers
 - Paper towel dispenser
 - Sharps bin surface taking care that no sharps project out of the bin
 - Computers and mice ensuring no excess fluid gets under the keys onto the screen and PC speakers
 - PRIMESCAM scanner
 - Taps and hand wash basins
 - Light switches and x-ray machine switches
 - Door handle (inside and on other side of door facing outwards)
 - Floor

- Discard all cleaning items and solutions as clinical waste
- Doff all PPE at the end of the cleaning session into clinical waste
- Carry out full hand hygiene prior to the next procedure
- Plug-in clinical camera to upload photographs from the surgery to the clinician's folder.

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We are currently researching the relative benefits of additional hypochlorous foggers to mist each room with a potentially various idle hypochlorous acid fog. However, these machines are currently awaiting arrival for mid-June and may be added to the protocol when they arrive as an additional measure.

Sterilising room procedure

No changes should be required to normal HTM 01-05 protocols apart from the following considerations.

- All non-essential small items in the decontamination and sterilisation room should be removed from the work surfaces and place into cupboards or drawers wherever possible.
- The disinfected outside of the instrument container brought from the sterilisation room to the surgery by the runner/greeting nurse should be regarded as clean and held by the runner/greeting nurse just at the door to the surgery.
- The assisting nurse who has just finished the procedure should place all instruments to be sterilised directly into the box taking care not to allow contamination of the outside of the box.
- The runner/greeting nurse should then place the box onto the floor and replace and lock the lid and transport the box of contaminated instruments to the sterilising room whereupon normal decontamination and sterilisation processing should continue as normal.
- The sterilising room nurse should don normal decontamination and sterilising room PPE in the absence of any droplet or aerosol within the sterilising room, including standard mask, eye protection, hairnet, plastic apron and thick protective gloves.

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- Special care should be taken not to allow spatter when emptying the box. Instruments should ideally be placed directly into the ultrasonic bath or washer disinfectant as appropriate without being sprayed with water in any way which may cause spread or droplet formation.
- Lids must always be maintained on all ultrasonic baths to prevent aerosol.
- All nurses must make doubly sure to doff all PPE in accordance with instructions above and go through full hand hygiene in the doffing zone outside each decontamination / sterilising room.
- At the end of each session the sterilising room should be cleaned in the same fashion as the dental surgery
- The winix units present in surgeries A, B, C should be wiped down at the end of each session and the interior filters cleaned as per manufacturer's instructions as required by the coloured light indicator on the unit turning red.
- Decontamination of equipment and the care environment must be performed using either:
 - a combined detergent/disinfectant solution at a dilution of 1,000 parts per million available chlorine (ppm av.Cl.) or
 - a general-purpose neutral detergent in a solution of warm water followed by a disinfectant solution of 1,000ppm av.Cl
- All disinfectants should conform to [EN standard 14476](#) for virucidal activity.

Laboratory protocols Outgoing work

Until now, outgoing dental laboratory work has been placed in into decontamination baths in each surgery before being bagged, packaged and boxed and given to the receptionist to send to the laboratory.

The reason for carrying out things in the surgery was so that delicate items were not damaged or lost in the sterilising room.

Processing impressions and work due to go to the lab in each surgery is still preferable but the protocol will need to change slightly to take into account the fact that the surgery will be vacated for 20 minutes at the end of each operative procedure.

The only issue is mainly for alginates which cannot be left for 20 minutes exposed nor 20 minutes immersed. The protocol should therefore be:

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- All impressions must be taken at the start of the procedure, sterilized and bagged before the start of any AGP's and placed in a container.
- All laboratory work due to go to the laboratory should be placed on and covered by a disposable bib/surface cover for the duration of the aerosol settling and air purification period (ASAPP).
- The lab work should be left away from direct sunlight so that any beauty wax records are not warped.
- The nursery entering the room with clean PPE to decontaminate the room after the aerosol settling and air purification period (ASAPP) should then immerse laboratory work into the decontamination solution for the 10 minutes it takes to wipe down the surgery. A timer should be set as normal (timers should be being stored within a cupboard rather than on the side).
- Laboratory work can then be rinsed, dried, wrapped and boxed normally using new gloves and bags and boxes stored away from aerosol within the cupboards after surgery decontamination has been completed.
- A sticker to indicate decontamination of contents has been completed should be stuck to the packaging.

Incoming work

- Standard procedures apply for incoming work which is steam cleaned and disinfected in the laboratory and then re-disinfected prior to fitting in the clinical environment. No changes to protocols are required other than those for packages being received as below under item 11.

Changes for waste disposal and third-party contractors

1. Handling of packages to the practice

- Delivery men including the postman should not enter the practice but leave all items just inside the front door on the main mat. The outside of the door and the door buzzer and grill should always be regarded as contaminated and outside the practice.
- It should be remembered that coronavirus can survive for up to a day on cardboard and paper and therefore all packaging coming to the practice should be regarded as being potentially contaminated.

- The runner/greeting nurse should undertake opening of all letters and boxes whilst wearing an FFP2 mask, protective gown and gloves as well as eye protection. When the boxes are opened the contents should be removed by a second nurse also wearing PPE and with alcohol wipes to disinfect or items that can be wiped down.
- Paper or cardboard boxed items that cannot be read wiped down without causing damp damage to the box or wiping of surface ink due to the alcohol content should be transferred to a decontaminated really useful box and left for at least 24 hours for the virus to die before the items are removed from the box and distributed to their storage places in the practice.
- The runner/greeting nurse who first opened the delivery boxes or envelopes should place them into a recycling bag the bag should then be sealed, the outside surface sprayed with hypochlorous vapour or alcohol wiped at the end of each day and left for the cleaner to dispose of.

2. Information pack for third-party contractors attending the practice

- A copy of this standard operating procedure and risk reduction recommendations document will be available on the website under our covert page and can be forwarded to any third-party contractors or delivery companies to SADC.

3. Feedback mechanism for third party contractors

- Any third-party contractor concerns or comments should be directed to the Dr Riaz Yar – riaz.yar@thesquaredental.com. We will endeavour to respond to them within 24 hours.

9. References

Regulatory and government references

Health Technical Memorandum HTM -01-05	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/170689/HTM_01-05_2013.pdf
Covid-19 personal protective equipment (PPE) – gov.uk	https://www.gov.uk/government/publications/wuh-an-novel-coronavirus-infection-prevention-and-control/covid-19-personal-protective-equipment-ppe#ppe-guidance-by-healthcare-context
Closing certain businesses and venues in England	https://www.gov.uk/government/publications/further-businesses-and-premises-to-close-further-businesses-and-premises-to-close-guidance
Considerations for acute personal protective equipment (PPE) shortages	https://www.gov.uk/government/publications/wuh-an-novel-coronavirus-infection-prevention-and-control/managing-shortages-in-personal-protective-equipment-ppe
COVID-19: Infection prevention and control	https://www.gov.uk/government/publications/wuh-an-novel-coronavirus-infection-prevention-and-control
Office of the Chief Dental Officer - Standard operating procedure - Transition to recovery: A phased transition for dental practices towards the resumption of the full range of dental provision V1 4th June 2020	https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/06/C0575-dental-transition-to-recovery-sop-4-June.pdf
Office of the Chief Dental Officer for England Resumption of Dental Services in England 28th May 2020	https://www.fgdp.org.uk/sites/fgdp.org.uk/files/editors/2020.05.28%20CDO%20England%20resumption%20of%20dental%20services.pdf
Office of the Chief Dental Officer for England – statement 19th May 2020	https://www.fgdp.org.uk/sites/fgdp.org.uk/files/editors/2020.05.28%20CDO%20England%20Prompt%20to%20Prepare%20Statement.pdf
Office of the Chief Dental Officer for England – A Prompt to prepare 19th May 2020	https://www.fgdp.org.uk/sites/fgdp.org.uk/files/editors/2020.05.28%20CDO%20England%20Prompt%20to%20Prepare%20pathway.pdf

Office of the Chief Dental Officer for England – issue 3 preparedness letter for primary dental care 25th of March 2020	https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/issue-3-preparedness-letter-for-primary-dental-care-25-march-2020.pdf
Health and Safety Executive - Personal protective equipment at work	https://www.hse.gov.uk/pubns/priced/l25.pdf
Health and Safety Executive - Biosafety and microbiological containment	https://www.hse.gov.uk/biosafety/index.htm
Health and Safety Executive - Fit testing basics- respiratory protective equipment (RPE)	https://www.hse.gov.uk/respiratory-protective-equipment/fit-testing-basics.htm
Health and Safety Executive – Guidance on respiratory protective equipment (RPE) fit testing	https://www.hse.gov.uk/pubns/indg479.pdf
Legionnaires’ disease: the control of legionella bacteria in water systems	https://www.hse.gov.uk/pubns/priced/l8.pdf
Control of legionella bacteria in water systems	https://www.hse.gov.uk/pubns/priced/ck02.pdf
British Standards Institute - new PPE (personal protective equipment) regulation	https://www.bsigroup.com/en-GB/our-services/product-certification/industry-sector-

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	schemes/personal-protective-equipment-ppe/PPE- regulation-revision-uk/
The Health and Social Care act 2008: code of practice on the prevention and control of infections	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/449049/Code_of_practice_280715_acc.pdf
Care Quality Commission - Dentists: information for providers	https://www.cqc.org.uk/guidance-providers/dentists
Care Quality Commission – Current position on Dental Care services regarding COVID-19 updates	https://www.cqc.org.uk/guidance-providers/dentists/current-position-dental-care-services-regarding-covid-19-updates
NHS England Dental Policies and procedures	https://www.england.nhs.uk/primary-care/dentistry/dental-commissioning/dental-policies-and-procedures/
General Dental Council – COVID-19 latest guidance for England	https://www.gdc-uk.org/information-standards-guidance/covid-19/covid-19-latest-information/covid-19-latest-guidance-for-england
General Dental Council – Standards for the Dental Team	https://standards.gdc-uk.org/
NHS – COVID-19 guidance and standard operating procedure – Delay Phase 15th April updated 18th May 2020	https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/04/C0282-covid-19-urgent-dental-care-sop.pdf
Public Health England – COVID-19: management of staff and exposed patients or residents in health and social care settings	https://www.gov.uk/government/publications/covid-19-management-of-exposed-healthcare-workers-and-patients-in-hospital-settings/covid-19-management-of-exposed-healthcare-workers-and-patients-in-hospital-settings
Public Health England – Asymptomatic worker: flowchart describing return to work following a SAES-CoV-2 test	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/885824/Flowchart_for_return_to_work_asymptomatic.pdf
Public Health England – Symptomatic worker: flowchart describing return to work following a SAES-CoV-2 test	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/885823/Flowchart_for_return_to_work_symptomatic.pdf
Dental Protection - Coronavirus FAQ – UK specific	https://www.dentalprotection.org/coronavirus/coronavirus-faq---uk-specific
MDDUS - Coronavirus FAQ	https://www.mddus.com/coronavirus/dental-advice
DDU – Returning to practice during the coronavirus pandemic	https://www.theddu.com/guidance-and-advice/latest-updates-and-advice/returning-to-practice-after-the-coronavirus-pandemic

SDCEP – COVID-19 Practice Recovery	https://www.sdcep.org.uk/published-guidance/covid-19-practice-recovery/
SDCEP Resuming General Dental Services Following COVID-19 Shutdown Patient COVID-19 screening 25 May 2020	http://www.sdcep.org.uk/wp-content/uploads/2020/05/Patient-COVID-19-screening-250520.pdf
Public Health England - Prepare and Protect – Putting on and removing PPE	https://www.rdash.nhs.uk/wp-content/uploads/2017/08/IPC-Appx-5-How-to-put-on-and-remove-PPE.pdf
COVID-19: infection prevention and control guidance	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/86668/COVID-19_Infection_prevention_and_control_guidance_complete.pdf

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FGDP - Implications of COVID-19 for the safe management of general dental practice - a practical guide	https://www.fgdp.org.uk/implications-covid-19-safe-management-general-dental-practice-practical-guide
FGDP - COVID-19: latest guidance, news and resources for GDPs	https://www.fgdp.org.uk/news/covid-19-latest-guidance-news-and-resources-gdps
OUR PLAN TO REBUILD: The UK Government's COVID-19 recovery strategy	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/884760/Our_plan_to_rebuild_The_UK_Government_s_COVID-19_recovery_strategy.pdf
NHS Professionals CG1 Standard Infection Prevention and Control Guidelines	http://www.secco-fms.com/pdf/CG1_Standard_Infection_Prevention_and_control_guidelines_v4_march_2013.pdf
NHS Scotland National Infection Prevention and Control Manual Appendix 1 - Best Practice - How to Hand Wash	http://www.nipcm.hps.scot.nhs.uk/appendices/appendix-1-best-practice-how-to-hand-wash/
NHS test and trace: how it works	https://www.gov.uk/guidance/nhs-test-and-trace-how-it-works
Public Health England Putting on (donning) personal protective equipment (PPE) for aerosol generating procedures (AGPs)	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879103/PHE_COVID-19_Donning_quick_guide_gown_version.pdf

NHS Standard infection control precautions: national hand hygiene and personal protective equipment policy	https://improvement.nhs.uk/documents/4957/National_policy_on_hand_hygiene_and_PPE_2.pdf
World Health Organisation - Advice on the use of masks in the context of COVID-19	https://www.who.int/publications-detail/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-(2019-ncov)-outbreak
British Dental Association – Returning to face-to-face care – COVID-19 special guidance 2nd June 2020	https://bda.org/advice/ba/Documents/returning-to-work-toolkit.pdf

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Position papers and key opinion leaders

1. Portman Dental Care Standard Operating Procedure - clinical advice forum 12 May 2020 (private and confidential document for internal use only - source undisclosed)
2. [British Association of Private Dentistry \(BAPD\) – Return to practice position paper 11 May 2020](#)
3. Cochrane Oral Health: [Recommendations for the reopening of dental services: rapid review of international sources – Covid-19 dental services evidence review \(CoDER\) working group 6th May 2020](#)
4. [BLIPA Dental Care Covid-19 enhance infection prevention and control \(IPC\) measures – 26th May 2020](#)
5. [Protocol to allow dental practices to reopen - Pandora Dental in association with Independent Practice Owners UK - May 2020](#)
6. Aerosols and dentistry – the science and its limitations – an opinion piece – Dr D. O’Hooley 24th April 2020.

With special thanks and with respect to all friends and colleagues who have freely and helpfully shared their views, experiences, documents, morale and humour throughout the lockdown.

Academic references

These references cover papers from the last 10 years. The references are those relevant papers returned by the search terms in italics in [PubMed](#). Please note that the same papers may appear on more than one occasion and be duplicated under different headings and search terms.

Incidence of COVID-19 amongst dental professionals

No results in PubMed

Proven infection of dental team member by dental patient

No results in PubMed

Proven infection of patient by dental professional

1: Pan Y, Liu H, Chu C, Li X, Liu S, Lu S. Transmission routes of SARS-CoV-2 and protective measures in dental clinics during the COVID-19 pandemic. *Am J Dent*. 2020 Jun;33(3):129-134. PMID: 32470237.

Risk of infection through dental aerosol

1: Nejatidanesh F, Khosravi Z, Goroohi H, Badrian H, Savabi O. Risk of Contamination of Different Areas of Dentist's Face During Dental Practices. *Int J Prev Med*. 2013 May;4(5):611-5. PMID: 23930175; PMCID: PMC3733195.

2: Szymańska J. Dental bioaerosol as an occupational hazard in a dentist's workplace. *Ann Agric Environ Med*. 2007;14(2):203-7. PMID: 18247451.

3: Lo Giudice R. The Severe Acute Respiratory Syndrome Coronavirus-2 (SARS CoV-2) in Dentistry. Management of Biological Risk in Dental Practice. *Int J Environ Res Public Health*. 2020 Apr 28;17(9):E3067. doi: 10.3390/ijerph17093067. PMID: 32354081.

4: Volgenant CMC, de Soet JJ. Cross-transmission in the Dental Office: Does This Make You Ill? *Curr Oral Health Rep*. 2018;5(4):221-228. doi: 10.1007/s40496-018-0201-3. Epub 2018 Oct 25. PMID: 30524929; PMCID: PMC6244620.

5: Damasceno JL, Dos Santos RA, Barbosa AH, Casemiro LA, Pires RH, Martins CHG. Risk of Fungal Infection to Dental Patients. *ScientificWorldJournal*. 2017;2017:2982478. doi: 10.1155/2017/2982478. Epub 2017 Jun 14. PMID: 28695189; PMCID: PMC5488164.

6: Su J. [Aerosol transmission risk and comprehensive prevention and control strategy in dental treatments]. *Zhonghua Kou Qiang Yi Xue Za Zhi*. 2020 Apr 9;55(4):229-234. Chinese. doi: 10.3760/cma.j.cn112144-20200303-00112. PMID: 32268623.

7: Marui VC, Souto MLS, Rovai ES, Romito GA, Chambrone L, Pannuti CM. Efficacy of preprocedural mouthrinses in the reduction of microorganisms in aerosol: A systematic review. *J Am Dent Assoc*. 2019 Dec;150(12):1015-1026.e1. doi: 10.1016/j.adaj.2019.06.024. PMID: 31761015.

- 8: Al-Sehaibany FS. Middle East respiratory syndrome in children. Dental considerations. *Saudi Med J*. 2017 Apr;38(4):339-343. doi: 10.15537/smj.2017.4.15777. PMID: 28397938; PMCID: PMC5447184.
- 9: Zemouri C, de Soet H, Crielaard W, Laheij A. A scoping review on bio-aerosols in healthcare and the dental environment. *PLoS One*. 2017 May 22;12(5):e0178007. doi: 10.1371/journal.pone.0178007. PMID: 28531183; PMCID: PMC5439730.
- 10: Veena HR, Mahantesha S, Joseph PA, Patil SR, Patil SH. Dissemination of aerosol and splatter during ultrasonic scaling: a pilot study. *J Infect Public Health*. 2015 May-Jun;8(3):260-5. doi: 10.1016/j.jiph.2014.11.004. Epub 2015 Jan 3. PMID: 25564419.
- 11: Kobza J, Pastuszka JS, Bragoszewska E. Do exposures to aerosols pose a risk to dental professionals? *Occup Med (Lond)*. 2018 Sep 13;68(7):454-458. doi: 10.1093/occmed/kqy095. PMID: 29931138; PMCID: PMC6135984.
- 12: Singh A, Shiva Manjunath RG, Singla D, Bhattacharya HS, Sarkar A, Chandra N. Aerosol, a health hazard during ultrasonic scaling: A clinico-microbiological study. *Indian J Dent Res*. 2016 Mar-Apr;27(2):160-2. doi: 10.4103/0970-9290.183131. PMID: 27237206.
- 13: Cristina ML, Spagnolo AM, Sartini M, Dallera M, Ottria G, Lombardi R, Perdelli F. Evaluation of the risk of infection through exposure to aerosols and splatters in dentistry. *Am J Infect Control*. 2008 May;36(4):304-7. doi: 10.1016/j.ajic.2007.07.019. PMID: 18455053.
- 14: Day CJ, Sandy JR, Ireland AJ. Aerosols and splatter in dentistry--a neglected menace? *Dent Update*. 2006 Dec;33(10):601-2, 604-6. doi: 10.12968/denu.2006.33.10.601. PMID: 17209534.
- 15: Pankhurst CL, Coulter WA. Do contaminated dental unit waterlines pose a risk of infection? *J Dent*. 2007 Sep;35(9):712-20. doi: 10.1016/j.jdent.2007.06.002. Epub 2007 Aug 6. PMID: 17689168.
- 16: Kumar S, Atray D, Paiwal D, Balasubramanyam G, Duraiswamy P, Kulkarni S. Dental unit waterlines: source of contamination and cross-infection. *J Hosp Infect*. 2010 Feb;74(2):99-111. doi: 10.1016/j.jhin.2009.03.027. PMID: 20113847.
- 17: Robert A, Bousseau A, Costa D, Barbot V, Imbert C. Are dentists enough aware of infectious risk associated with dental unit waterlines ? *Bull Group Int Rech Sci Stomatol Odontol*. 2013 Jul 10;52(1):e29-34. PMID: 25461446.
- 18: Proffitt E. What will be the new normal for the dental industry? *Br Dent J*. 2020 May;228(9):678-680. doi: 10.1038/s41415-020-1583-x. PMID: 32385458.
- 19: Jain M, Mathur A, Mathur A, Mukhi PU, Ahire M, Pingal C. Qualitative and quantitative analysis of bacterial aerosols in dental clinical settings: Risk exposure towards dentist, auxiliary staff, and patients. *J Family Med Prim Care*.

2020 Feb 28;9(2):1003-1008. doi: 10.4103/jfmpc.jfmpc_863_19. PMID: 32318458; PMCID: PMC7113934.

20: Volgenant CMC, Persoon IF, de Ruijter RAG, de Soet JJH. Infection control in dental health care during and after the SARS-CoV-2 outbreak. Oral Dis. 2020 May 11. doi: 10.1111/odi.13408. Epub ahead of print. PMID: 32391651.

SADDC

- 21: Pereira LJ, Pereira CV, Murata RM, Pardi V, Pereira-Dourado SM. Biological and social aspects of Coronavirus Disease 2019 (COVID-19) related to oral health. *Braz Oral Res.* 2020 May 8;34:e041. doi: 10.1590/1807-3107bor-2020.vol34.0041. PMID: 32401931.
- 22: Araujo MW, Andreana S. Risk and prevention of transmission of infectious diseases in dentistry. *Quintessence Int.* 2002 May;33(5):376-82. PMID: 12014168.
- 23: Prospero E, Savini S, Annino I. Microbial aerosol contamination of dental healthcare workers' faces and other surfaces in dental practice. *Infect Control Hosp Epidemiol.* 2003 Feb;24(2):139-41. doi: 10.1086/502172. PMID: 12602698.
- 24: Li Y, Ren B, Peng X, Hu T, Li J, Gong T, Tang B, Xu X, Zhou X. Saliva is a non-negligible factor in the spread of COVID-19. *Mol Oral Microbiol.* 2020 May 4. doi: 10.1111/omi.12289. Epub ahead of print. PMID: 32367576.
- 25: Monaghan NP. Emerging infections - implications for dental care. *Br Dent J.* 2016 Jul 8;221(1):13-5. doi: 10.1038/sj.bdj.2016.486. PMID: 27388077; PMCID: PMC7091647.
- 26: Jamal M, Shah M, Almarzooqi SH, Aber H, Khawaja S, El Abed R, Alkhatib Z, Samaranayake LP. Overview of transnational recommendations for COVID-19 transmission control in dental care settings. *Oral Dis.* 2020 May 19. doi: 10.1111/odi.13431. Epub ahead of print. PMID: 32428372.
- 27: Bennett AM, Fulford MR, Walker JT, Bradshaw DJ, Martin MV, Marsh PD. Microbial aerosols in general dental practice. *Br Dent J.* 2000 Dec 23;189(12):664-7. doi: 10.1038/sj.bdj.4800859. PMID: 11191178.
- 28: Kimmerle H, Wiedmann-Al-Ahmad M, Pelz K, Wittmer A, Hellwig E, Al-Ahmad A. Airborne microbes in different dental environments in comparison to a public area. *Arch Oral Biol.* 2012 Jun;57(6):689-96. doi: 10.1016/j.archoralbio.2011.11.012. Epub 2011 Dec 9. PMID: 22169221.
- 29: Browning WD, McCarthy JP. A case series: herpes simplex virus as an occupational hazard. *J Esthet Restor Dent.* 2012 Feb;24(1):61-6. doi: 10.1111/j.1708-8240.2011.00469.x. Epub 2011 Aug 30. PMID: 22296698; PMCID: PMC3437498.
- 30: Discacciati JA, Sander HH, de Castilho LS, Resende VL. Verificação da dispersão de respingos durante o trabalho do cirurgião-dentista [Determination of the dispersion of microorganisms in the course of dental surgical activity]. *Rev Panam Salud Publica.* 1998 Feb;3(2):84-7. Portuguese. doi: 10.1590/s1020-49891998000200003. PMID: 9542444.
- 31: Serban D, Banu A, Serban C, Tuță-Sas I, Vlaicu B. Predictors of quantitative microbiological analysis of spatter and aerosolization during scaling. *Rev Med Chir Soc Med Nat Iasi.* 2013 Apr-Jun;117(2):503-8. PMID: 24340537.
- 32: Walmsley AD. Potential hazards of the dental ultrasonic scaler. *Ultrasound Med Biol.* 1988;14(1):15-20. doi: 10.1016/0301-5629(88)90159-7. PMID: 3279684.

THE SQUARE ADVANCED DENTAL CARE

33: Guida M, Gallé F, Di Onofrio V, Nastro RA, Battista M, Liguori R, Battista F, Liguori G. Environmental microbial contamination in dental setting: a local experience. J Prev Med Hyg. 2012 Dec;53(4):207-12. PMID: 23469590.

SADC

34: Ishihama K, Koizumi H, Wada T, Iida S, Tanaka S, Yamanishi T, Enomoto A, Kogo M. Evidence of aerosolised floating blood mist during oral surgery. *J Hosp Infect.* 2009 Apr;71(4):359-64. doi: 10.1016/j.jhin.2008.12.005. Epub 2009 Feb 6. PMID: 19201057.

35: Luksamijarulkul P, Panya N, Sujirarat D, Thaweboon S. Microbial air quality and standard precaution practice in a hospital dental clinic. *J Med Assoc Thai.* 2009 Dec;92 Suppl 7:S148-55. PMID: 20232568.

The role of aerosol in the spread of COVID-19 in dentistry

1: Umer F, Haji Z, Zafar K. Role of respirators in controlling the spread of novel coronavirus (COVID-19) amongst dental healthcare providers: a review. *Int Endod J.* 2020 May 1. doi: 10.1111/iej.13313. Epub ahead of print. PMID: 32357257.

2: Han P, Ivanovski S. Saliva-Friend and Foe in the COVID-19 Outbreak. *Diagnostics (Basel).* 2020 May 9;10(5):E290. doi: 10.3390/diagnostics10050290. PMID: 32397487.

3: Lo Giudice R. The Severe Acute Respiratory Syndrome Coronavirus-2 (SARS CoV-2) in Dentistry. *Management of Biological Risk in Dental Practice.* *Int J Environ Res Public Health.* 2020 Apr 28;17(9):E3067. doi: 10.3390/ijerph17093067. PMID: 32354081.

4: Warnakulasuriya S. Protecting dental manpower from COVID 19 infection. *Oral Dis.* 2020 May 13. doi: 10.1111/odi.13410. Epub ahead of print. PMID: 32401373.

5: Volgenant CMC, Persoon IF, de Ruijter RAG, de Soet JJH. Infection control in dental health care during and after the SARS-CoV-2 outbreak. *Oral Dis.* 2020 May 11. doi: 10.1111/odi.13408. Epub ahead of print. PMID: 32391651.

6: Turkistani KA. Precautions and recommendations for orthodontic settings during the COVID-19 outbreak: A review. *Am J Orthod Dentofacial Orthop.* 2020 May 13. doi: 10.1016/j.ajodo.2020.04.016. Epub ahead of print. PMID: 32405152; PMCID: PMC7218376.

7: Jamal M, Shah M, Almarzooqi SH, Aber H, Khawaja S, El Abed R, Alkhatib Z, Samaranyake LP. Overview of transnational recommendations for COVID-19 transmission control in dental care settings. *Oral Dis.* 2020 May 19. doi: 10.1111/odi.13431. Epub ahead of print. PMID: 32428372.

8: Long RH, Ward TD, Pruett ME, Coleman JF, Plaisance MC Jr. Modifications of emergency dental clinic protocols to combat COVID-19 transmission. *Spec Care Dentist.* 2020 May;40(3):219-226. doi: 10.1111/scd.12472. Epub 2020 May 24. PMID: 32447777.

Dental aerosol as a potential infection risk

1: Volgenant CMC, de Soet JJ. Cross-transmission in the Dental Office: Does This Make You Ill? *Curr Oral Health Rep.* 2018;5(4):221-228. doi: 10.1007/s40496-018-0201-3. Epub 2018 Oct 25. PMID: 30524929; PMCID: PMC6244620.

2: Zemouri C, de Soet H, Crielaard W, Laheij A. A scoping review on bio-aerosols in healthcare and the dental environment. PLoS One. 2017 May 22;12(5):e0178007.

SADC

doi: 10.1371/journal.pone.0178007. PMID: 28531183; PMCID: PMC5439730.

3: Kobza J, Pastuszka JS, Bragoszewska E. Do exposures to aerosols pose a risk to dental professionals? *Occup Med (Lond)*. 2018 Sep 13;68(7):454-458. doi: 10.1093/occmed/kqy095. PMID: 29931138; PMCID: PMC6135984.

4: Su J. [Aerosol transmission risk and comprehensive prevention and control strategy in dental treatments]. *Zhonghua Kou Qiang Yi Xue Za Zhi*. 2020 Apr 9;55(4):229-234. Chinese. doi: 10.3760/cma.j.cn112144-20200303-00112. PMID: 32268623.

5: Veena HR, Mahantesha S, Joseph PA, Patil SR, Patil SH. Dissemination of aerosol and splatter during ultrasonic scaling: a pilot study. *J Infect Public Health*. 2015 May-Jun;8(3):260-5. doi: 10.1016/j.jiph.2014.11.004. Epub 2015 Jan 3. PMID: 25564419.

6: Singh A, Shiva Manjunath RG, Singla D, Bhattacharya HS, Sarkar A, Chandra N. Aerosol, a health hazard during ultrasonic scaling: A clinico-microbiological study. *Indian J Dent Res*. 2016 Mar-Apr;27(2):160-2. doi: 10.4103/0970-9290.183131. PMID: 27237206.

7: Damasceno JL, Dos Santos RA, Barbosa AH, Casemiro LA, Pires RH, Martins CHG. Risk of Fungal Infection to Dental Patients. *ScientificWorldJournal*. 2017;2017:2982478. doi: 10.1155/2017/2982478. Epub 2017 Jun 14. PMID: 28695189; PMCID: PMC5488164.

8: Petti S, Vitali M. Occupational risk for *Legionella* infection among dental healthcare workers: meta-analysis in occupational epidemiology. *BMJ Open*. 2017 Jul 13;7(7):e015374. doi: 10.1136/bmjopen-2016-015374. PMID: 28710211; PMCID: PMC5734417.

9: Nejatidanesh F, Khosravi Z, Goroohi H, Badrian H, Savabi O. Risk of Contamination of Different Areas of Dentist's Face During Dental Practices. *Int J Prev Med*. 2013 May;4(5):611-5. PMID: 23930175; PMCID: PMC3733195.

10: Marui VC, Souto MLS, Rovai ES, Romito GA, Chambrone L, Pannuti CM. Efficacy of preprocedural mouthrinses in the reduction of microorganisms in aerosol: A systematic review. *J Am Dent Assoc*. 2019 Dec;150(12):1015-1026.e1. doi: 10.1016/j.adaj.2019.06.024. PMID: 31761015.

11: Bracher L, Kulik EM, Waltimo T, Türp JC. Surface microbial contamination in a dental department. A 10-year retrospective analysis. *Swiss Dent J*. 2019 Jan 14;129(1):14-21. PMID: 30626176.

12: Lo Giudice R. The Severe Acute Respiratory Syndrome Coronavirus-2 (SARS CoV-2) in Dentistry. Management of Biological Risk in Dental Practice. *Int J Environ Res Public Health*. 2020 Apr 28;17(9):E3067. doi: 10.3390/ijerph17093067. PMID: 32354081.

13: Warnakulasuriya S. Protecting dental manpower from COVID 19 infection. *Oral Dis*. 2020 May 13. doi: 10.1111/odi.13410. Epub ahead of print. PMID: 32401373.

14: Volgenant CMC, Persoon IF, de Ruijter RAG, de Soet JJH. Infection control in dental health care during and after the SARS-CoV-2 outbreak. *Oral Dis*. 2020 May

11. doi: 10.1111/odi.13408. Epub ahead of print. PMID: 32391651.

SADC

- 15: Proffitt E. What will be the new normal for the dental industry? *Br Dent J.* 2020 May;228(9):678-680. doi: 10.1038/s41415-020-1583-x. PMID: 32385458.
- 16: Pereira LJ, Pereira CV, Murata RM, Pardi V, Pereira-Dourado SM. Biological and social aspects of Coronavirus Disease 2019 (COVID-19) related to oral health. *Braz Oral Res.* 2020 May 8;34:e041. doi: 10.1590/1807-3107bor-2020.vol34.0041. PMID: 32401931.
- 17: Li Y, Ren B, Peng X, Hu T, Li J, Gong T, Tang B, Xu X, Zhou X. Saliva is a non-negligible factor in the spread of COVID-19. *Mol Oral Microbiol.* 2020 May 4. doi: 10.1111/omi.12289. Epub ahead of print. PMID: 32367576.
- 18: Shetty SK, Sharath K, Shenoy S, Sreekumar C, Shetty RN, Biju T. Compare the efficacy of two commercially available mouthrinses in reducing viable bacterial count in dental aerosol produced during ultrasonic scaling when used as a preprocedural rinse. *J Contemp Dent Pract.* 2013 Sep 1;14(5):848-51. doi: 10.5005/jp-journals-10024-1414. PMID: 24685786.
- 19: Monaghan NP. Emerging infections - implications for dental care. *Br Dent J.* 2016 Jul 8;221(1):13-5. doi: 10.1038/sj.bdj.2016.486. PMID: 27388077; PMCID: PMC7091647.
- 20: Joshi AA, Padhye AM, Gupta HS. Efficacy of Two Pre-Procedural Rinses at Two Different Temperatures in Reducing Aerosol Contamination Produced During Ultrasonic Scaling in a Dental Set-up - A Microbiological Study. *J Int Acad Periodontol.* 2017 Oct 1;19(4):138-144. PMID: 31473729.
- 21: Jung IH, Kim JH, Yoo YJ, Park BY, Choi ES, Noh H. A pilot study of occupational exposure to pathogenic microorganisms through lip cosmetics among dental hygienists. *J Occup Health.* 2019 Jul;61(4):297-304. doi: 10.1002/1348-9585.12047. Epub 2019 Mar 6. PMID: 30839156; PMCID: PMC6620744.
- 22: Kimmerle H, Wiedmann-Al-Ahmad M, Pelz K, Wittmer A, Hellwig E, Al-Ahmad A. Airborne microbes in different dental environments in comparison to a public area. *Arch Oral Biol.* 2012 Jun;57(6):689-96. doi: 10.1016/j.archoralbio.2011.11.012. Epub 2011 Dec 9. PMID: 22169221.
- 23: Browning WD, McCarthy JP. A case series: herpes simplex virus as an occupational hazard. *J Esthet Restor Dent.* 2012 Feb;24(1):61-6. doi: 10.1111/j.1708-8240.2011.00469.x. Epub 2011 Aug 30. PMID: 22296698; PMCID: PMC3437498.
- 24: Jamal M, Shah M, Almarzooqi SH, Aber H, Khawaja S, El Abed R, Alkhatib Z, Samaranayake LP. Overview of transnational recommendations for COVID-19 transmission control in dental care settings. *Oral Dis.* 2020 May 19. doi: 10.1111/odi.13431. Epub ahead of print. PMID: 32428372.
- 25: Martins-Filho PR, de Gois-Santos VT, Tavares CSS, de Melo EGM, do Nascimento-Júnior EM, Santos VS. Recommendations for a safety dental care management during SARS-CoV-2 pandemic. *Rev Panam Salud Publica.* 2020 Apr 10;44:e51. doi: 10.26633/RPSP.2020.51. PMID: 32382259; PMCID: PMC7201058.
- 26: Al-Eid RA, Ramalingam S, Sundar C, Aldawsari M, Nooh N. Detection of Visually Imperceptible Blood Contamination in the Oral Surgical Clinic using

Forensic Luminol Blood Detection Agent. J Int Soc Prev Community Dent. 2018 Jul-Aug;8(4):327-332. doi: 10.4103/jispcd.JISPCD_10_18. Epub 2018 Jul 18.
PMID:

SADC

30123765; PMID: PMC6071351.

27: Guida M, Gallé F, Di Onofrio V, Nastro RA, Battista M, Liguori R, Battista F, Liguori G. Environmental microbial contamination in dental setting: a local experience. *J Prev Med Hyg.* 2012 Dec;53(4):207-12. PMID: 23469590.

28: Wu KY, Wu DT, Nguyen TT, Tran SD. COVID-19's Impact on Private Practice and Academic Dentistry in North America. *Oral Dis.* 2020 May 30. doi: 10.1111/odi.13444. Epub ahead of print. PMID: 32472974.

29: Serban D, Banu A, Serban C, Tuță-Sas I, Vlaicu B. Predictors of quantitative microbiological analysis of spatter and aerosolization during scaling. *Rev Med Chir Soc Med Nat Tasi.* 2013 Apr-Jun;117(2):503-8. PMID: 24340537.

The incidence of infection from dental aerosol

1: Odeh ND, Babkair H, Abu-Hammad S, Borzangy S, Abu-Hammad A, Abu-Hammad O. COVID-19: Present and Future Challenges for Dental Practice. *Int J Environ Res Public Health.* 2020 Apr 30;17(9):E3151. doi: 10.3390/ijerph17093151. PMID: 32366034.

2: Lo Giudice R. The Severe Acute Respiratory Syndrome Coronavirus-2 (SARS CoV-2) in Dentistry. Management of Biological Risk in Dental Practice. *Int J Environ Res Public Health.* 2020 Apr 28;17(9):E3067. doi: 10.3390/ijerph17093067. PMID: 32354081.

3: Li Y, Ren B, Peng X, Hu T, Li J, Gong T, Tang B, Xu X, Zhou X. Saliva is a non-negligible factor in the spread of COVID-19. *Mol Oral Microbiol.* 2020 May 4. doi: 10.1111/omi.12289. Epub ahead of print. PMID: 32367576.

4: Browning WD, McCarthy JP. A case series: herpes simplex virus as an occupational hazard. *J Esthet Restor Dent.* 2012 Feb;24(1):61-6. doi: 10.1111/j.1708-8240.2011.00469.x. Epub 2011 Aug 30. PMID: 22296698; PMID: PMC3437498.

Disease transmission to dental professionals

1: Saccucci M, Ierardo G, Protano C, Vitali M, Polimeni A. How to manage the biological risk in a dental clinic: current and future perspectives. *Minerva Stomatol.* 2017 Oct;66(5):232-239. doi: 10.23736/S0026-4970.17.04087-0. Epub 2017 Jun 23. PMID: 28650137.

2: Ather A, Patel B, Ruparel NB, Diogenes A, Hargreaves KM. Coronavirus Disease 19 (COVID-19): Implications for Clinical Dental Care. *J Endod.* 2020 May;46(5):584-595. doi: 10.1016/j.joen.2020.03.008. Epub 2020 Apr 6. PMID: 32273156.

3: Yoo YJ, Kwak EJ, Jeong KM, Baek SH, Baek YS. Knowledge, attitudes and practices regarding methicillin-resistant *Staphylococcus aureus* (MRSA) infection control and nasal MRSA carriage rate among dental health-care professionals. *Int Dent J.* 2018 Oct;68(5):359-366. doi: 10.1111/idj.12388. Epub 2018 Mar 25. PMID: 29577266.

4: Baghizadeh Fini M. What dentists need to know about COVID-19. *Oral Oncol.* 2020 Jun;105:104741. doi: 10.1016/j.oraloncology.2020.104741. Epub 2020

Apr 28.

SADC

PMID: 32380453; PMCID: PMC7186204.

5: Coulthard P. Dentistry and coronavirus (COVID-19) - moral decision-making. *Br Dent J.* 2020 Apr;228(7):503-505. doi: 10.1038/s41415-020-1482-1. PMID: 32277203.

6: Mallineni SK, Innes NP, Raggio DP, Araujo MP, Robertson MD, Jayaraman J. Coronavirus disease (COVID-19): Characteristics in children and considerations for dentists providing their care. *Int J Paediatr Dent.* 2020 May;30(3):245-250. doi: 10.1111/ipd.12653. Epub 2020 Apr 16. PMID: 32250505; PMCID: PMC7228382.

7: Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren B. Transmission routes of 2019-nCoV and controls in dental practice. *Int J Oral Sci.* 2020 Mar 3;12(1):9. doi: 10.1038/s41368-020-0075-9. PMID: 32127517; PMCID: PMC7054527.

8: Izzetti R, Nisi M, Gabriele M, Graziani F. COVID-19 Transmission in Dental Practice: Brief Review of Preventive Measures in Italy. *J Dent Res.* 2020 Apr 17:22034520920580. doi: 10.1177/0022034520920580. Epub ahead of print. PMID: 32302257.

9: Sri Santosh T, Parmar R, Anand H, Srikanth K, Saritha M. A Review of Salivary Diagnostics and Its Potential Implication in Detection of COVID-19. *Cureus.* 2020 Apr 17;12(4):e7708. doi: 10.7759/cureus.7708. PMID: 32313785; PMCID: PMC7164701.

10: Ahmed MA, Jouhar R, Ahmed N, Adnan S, Aftab M, Zafar MS, Khurshid Z. Fear and Practice Modifications among Dentists to Combat Novel Coronavirus Disease (COVID-19) Outbreak. *Int J Environ Res Public Health.* 2020 Apr 19;17(8):2821. doi: 10.3390/ijerph17082821. PMID: 32325888; PMCID: PMC7216192.

11: Warnakulasuriya S. Protecting dental manpower from COVID 19 infection. *Oral Dis.* 2020 May 13. doi: 10.1111/odi.13410. Epub ahead of print. PMID: 32401373.

12: Garbin CA, de Souza NP, de Vasconcelos RR, Garbin AJ, Villar LM. Hepatitis C virus and dental health workers: an update. *Oral Health Prev Dent.* 2014;12(4):313-21. doi: 10.3290/j.ohpd.a32134. PMID: 24914431.

13: Monaghan NP. Emerging infections - implications for dental care. *Br Dent J.* 2016 Jul 8;221(1):13-5. doi: 10.1038/sj.bdj.2016.486. PMID: 27388077; PMCID: PMC7091647.

14: Gambhir RS, Pannu PR, Nanda T, Arora G, Kaur A. Knowledge and Awareness Regarding Swine-Influenza A (H1N1) Virus Infection among Dental Professionals in India - A Systematic Review. *J Clin Diagn Res.* 2016 Sep;10(9):ZE10-ZE13. doi: 10.7860/JCDR/2016/20387.8536. Epub 2016 Sep 1. PMID: 27790597; PMCID: PMC5072097.

15: Kleven RM, Moorman AC. Hepatitis C virus: an overview for dental health care providers. *J Am Dent Assoc.* 2013 Dec;144(12):1340-7. doi: 10.14219/jada.archive.2013.0069. PMID: 24282263; PMCID: PMC5736133.

16: Taiwo O. Dental practice, human immunodeficiency virus transmission and occupational risks: views from a teaching hospital in Nigeria. *Ann Med Health*

Sci Res. 2014 Jul;4(Suppl 2):S94-8. doi: 10.4103/2141-9248.138020.
PMID: 25184095; PMCID: PMC414525.

17: Khandelwal V, Khandelwal S, Gupta N, Nayak UA, Kulshreshtha N, Baliga S.
Knowledge of hepatitis B virus infection and its control practices among dental

SADDC

students in an Indian city. *Int J Adolesc Med Health*. 2017 Aug 18;30(5):/j/ijamh.2018.30.issue-5/ijamh-2016-0103/ijamh-2016-0103.xml. doi: 10.1515/ijamh-2016-0103. PMID: 28820730.

18: Pan Y, Liu H, Chu C, Li X, Liu S, Lu S. Transmission routes of SARS-CoV-2 and protective measures in dental clinics during the COVID-19 pandemic. *Am J Dent*. 2020 Jun;33(3):129-134. PMID: 32470237.

19: Wu L, Yin YL, Song JL, Chen Y, Wu YF, Zhao L. Knowledge, attitudes and practices surrounding occupational blood-borne pathogen exposure amongst students in two Chinese dental schools. *Eur J Dent Educ*. 2016 Nov;20(4):206-212. doi: 10.1111/eje.12162. Epub 2015 Jul 16. PMID: 26184829.

20: Hovliaras CA. Preprocedural rinsing in the dental office: a consideration for improved infection control among the dental team and patients. *J N J Dent Assoc*. 2013 Fall;84(4):27-31. PMID: 24597184.

21: Flint SR, Croser D, Reznik D, Glick M, Naidoo S, Coogan M. HIV transmission in the dental setting and the HIV-infected oral health care professional: workshop 1C. *Adv Dent Res*. 2011 Apr;23(1):106-11. doi: 10.1177/0022034511400075. PMID: 21441490.

22: Jamal M, Shah M, Almarzooqi SH, Aber H, Khawaja S, El Abed R, Alkhatib Z, Samaranyake LP. Overview of transnational recommendations for COVID-19 transmission control in dental care settings. *Oral Dis*. 2020 May 19. doi: 10.1111/odi.13431. Epub ahead of print. PMID: 32428372.

23: Bagg J, Roy K, Hopps L, Black I, Croser D, O'Halloran C, Ncube F. No longer 'written off' - times have changed for the BBV-infected dental professional. *Br Dent J*. 2017 Jan 13;222(1):47-52. doi: 10.1038/sj.bdj.2017.36. PMID: 28084394.

24: Molinari JA. Methicillin-resistant *Staphylococcus aureus*. A continuing infection control challenge. *Dent Today*. 2012 Apr;31(4):74, 76-7; quiz 78-9. PMID: 22612032.

25: Costa SM, Lacerda GT, Villafort RN, Silveira RL, Amaral MBF. We Know About COVID-19: Oral and Maxillofacial Surgeons Survey. *J Craniofac Surg*. 2020 May 28. doi: 10.1097/SCS.0000000000006658. Epub ahead of print. PMID: 32472897.

26: Chen JW, Wang J, Wang AQ, Zhang J, Han LH. [Blood-borne occupation exposures in dental practice of medical staff: status and protection]. *Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi*. 2020 Jan 20;38(1):29-32. Chinese. doi: 10.3760/cma.j.issn.1001-9391.2020.01.006. PMID: 32062892.

27: Yasser F, Sherazi R, Shahbaz RY, Iqbal N, Iqbal S, Kamran R. Possible Mode of Spread of Hepatitis B and Hepatitis C in Chronic Liver Disease Patients Presenting at CMH Lahore Medical College and Institute of Dentistry. *Cureus*. 2020 Feb 3;12(2):e6863. doi: 10.7759/cureus.6863. PMID: 32181098; PMCID: PMC7053683.

28: Naeem A, Saluja SA, Krishna D, Shitanshu M, Arun S, Taseer B.

THE SQUARE ADVANCED DENTAL CARE

Contamination of Dentist's Hands with and without Finger Rings. J Int Oral Health. 2015 Aug;7(8):114-7. PMID: 26464552; PMCID: PMC4588775.

29: Wu KY, Wu DT, Nguyen TT, Tran SD. COVID-19's Impact on Private Practice and Academic Dentistry in North America. Oral Dis. 2020 May 30. doi:

SADC

10.1111/odi.13444. Epub ahead of print. PMID: 32472974. There

Dental aerosol as an infective medium

1: Dahlke WO, Cottam MR, Herring MC, Leavitt JM, Ditmyer MM, Walker RS. Evaluation of the spatter-reduction effectiveness of two dry-field isolation techniques. *J Am Dent Assoc.* 2012 Nov;143(11):1199-204. doi: 10.14219/jada.archive.2012.0064. PMID: 23115148; PMCID: PMC7093867.

2: Graetz C, Bielfeldt J, Tillner A, Plaumann A, Dörfer CE. Spatter contamination in dental practices--how can it be prevented? *Rev Med Chir Soc Med Nat Iasi.* 2014 Oct-Dec;118(4):1122-34. PMID: 25581979.

3: Jain M, Mathur A, Mathur A, Mukhi PU, Ahire M, Pingal C. Qualitative and quantitative analysis of bacterial aerosols in dental clinical settings: Risk exposure towards dentist, auxiliary staff, and patients. *J Family Med Prim Care.* 2020 Feb 28;9(2):1003-1008. doi: 10.4103/jfmprc.jfmprc_863_19. PMID: 32318458; PMCID: PMC7113934.

4: Sachdev R, Garg K, Singh G, Mehrotra V. Is safeguard compromised? Surgical mouth mask harboring hazardous microorganisms in dental practice. *J Family Med Prim Care.* 2020 Feb 28;9(2):759-763. doi: 10.4103/jfmprc.jfmprc_1039_19. PMID: 32318416; PMCID: PMC7113990.

5: Serban D, Banu A, Serban C, Tuță-Sas I, Vlaicu B. Predictors of quantitative microbiological analysis of spatter and aerosolization during scaling. *Rev Med Chir Soc Med Nat Iasi.* 2013 Apr-Jun;117(2):503-8. PMID: 24340537.

6: Hatagishi E, Okamoto M, Ohmiya S, Yano H, Hori T, Saito W, Miki H, Suzuki Y, Saito R, Yamamoto T, Shoji M, Morisaki Y, Sakata S, Nishimura H. Establishment and clinical applications of a portable system for capturing influenza viruses released through coughing. *PLoS One.* 2014 Aug 1;9(8):e103560. doi: 10.1371/journal.pone.0103560. PMID: 25083787; PMCID: PMC4118893.

SARS in human saliva

1: Wang WK, Chen SY, Liu IJ, Chen YC, Chen HL, Yang CF, Chen PJ, Yeh SH, Kao CL, Huang LM, Hsueh PR, Wang JT, Sheng WH, Fang CT, Hung CC, Hsieh SM, Su CP, Chiang WC, Yang JY, Lin JH, Hsieh SC, Hu HP, Chiang YP, Wang JT, Yang PC, Chang SC; SARS Research Group of the National Taiwan University/National Taiwan University Hospital. Detection of SARS-associated coronavirus in throat wash and saliva in early diagnosis. *Emerg Infect Dis.* 2004 Jul;10(7):1213-9. doi: 10.3201/eid1007.031113. PMID: 15324540; PMCID: PMC3323313.

2: Testarelli L, D'Aversa L, Dolci G. The challenge of severe acute respiratory syndrome (SARS) in dentistry. *Minerva Stomatol.* 2004 Jul-Aug;53(7-8):389-402. English, Italian. PMID: 15278018.

3: Li Y, Ren B, Peng X, Hu T, Li J, Gong T, Tang B, Xu X, Zhou X. Saliva is a non-negligible factor in the spread of COVID-19. *Mol Oral Microbiol.* 2020 May 4. doi: 10.1111/omi.12289. Epub ahead of print. PMID: 32367576.

4: Cheng VCC, Wong SC, Chen JHK, Yip CCY, Chuang VWM, Tsang OTY, Sridhar S, Chan

JFW, Ho PL, Yuen KY. Escalating infection control response to the rapidly evolving epidemiology of the coronavirus disease 2019 (COVID-19) due to SARS-CoV-2 in Hong Kong. *Infect Control Hosp Epidemiol.* 2020 May;41(5):493-498. doi: 10.1017/ice.2020.58. Epub 2020 Mar 5. PMID: 32131908; PMCID: PMC7137535.

5: Sullivan PS, Sailey C, Guest JL, Guarner J, Kelley C, Siegler AJ, Valentine-Graves M, Gravens L, Del Rio C, Sanchez TH. Detection of SARS-CoV-2 RNA and Antibodies in Diverse Samples: Protocol to Validate the Sufficiency of Provider-Observed, Home-Collected Blood, Saliva, and Oropharyngeal Samples. *JMIR Public Health Surveill.* 2020 Apr 24;6(2):e19054. doi: 10.2196/19054. PMID: 32310815; PMCID: PMC7184968.

6: Lo Giudice R. The Severe Acute Respiratory Syndrome Coronavirus-2 (SARS CoV-2) in Dentistry. Management of Biological Risk in Dental Practice. *Int J Environ Res Public Health.* 2020 Apr 28;17(9):E3067. doi: 10.3390/ijerph17093067. PMID: 32354081.

7: Yoon JG, Yoon J, Song JY, Yoon SY, Lim CS, Seong H, Noh JY, Cheong HJ, Kim WJ. Clinical Significance of a High SARS-CoV-2 Viral Load in the Saliva. *J Korean Med Sci.* 2020 May 25;35(20):e195. doi: 10.3346/jkms.2020.35.e195. PMID: 32449329; PMCID: PMC7246183.

8: Xu R, Cui B, Duan X, Zhang P, Zhou X, Yuan Q. Saliva: potential diagnostic value and transmission of 2019-nCoV. Version 2. *Int J Oral Sci.* 2020 Apr 17;12(1):11. doi: 10.1038/s41368-020-0080-z. PMID: 32300101; PMCID: PMC7162686.

9: Gabutti G, d'Anchera E, Sandri F, Savio M, Stefanati A. Coronavirus: Update Related to the Current Outbreak of COVID-19. Version 2. *Infect Dis Ther.* 2020 Apr 8;9(2):1-13. doi: 10.1007/s40121-020-00295-5. Epub ahead of print. PMID: 32292686; PMCID: PMC7139198.

10: Odeh ND, Babkair H, Abu-Hammad S, Borzangy S, Abu-Hammad A, Abu-Hammad O. COVID-19: Present and Future Challenges for Dental Practice. *Int J Environ Res Public Health.* 2020 Apr 30;17(9):E3151. doi: 10.3390/ijerph17093151. PMID: 32366034.

11: Fang LS. SARS and the dental professional. *Dent Today.* 2003 Sep;22(9):14-6. PMID: 14552214.

Viral load and SARS symptoms

1: Peiris JS, Chu CM, Cheng VC, Chan KS, Hung IF, Poon LL, Law KI, Tang BS, Hon TY, Chan CS, Chan KH, Ng JS, Zheng BJ, Ng WL, Lai RW, Guan Y, Yuen KY; HKU/UCH SARS Study Group. Clinical progression and viral load in a community outbreak of coronavirus-associated SARS pneumonia: a prospective study. *Lancet.* 2003 May 24;361(9371):1767-72. doi: 10.1016/s0140-6736(03)13412-5. PMID: 12781535; PMCID: PMC7112410.

2: Hung IF, Lau SK, Woo PC, Yuen KY. Viral loads in clinical specimens and SARS manifestations. *Hong Kong Med J.* 2009 Dec;15 Suppl 9:20-2. PMID: 20393220.

3: Hung IF, Cheng VC, Wu AK, Tang BS, Chan KH, Chu CM, Wong MM, Hui WT, Poon LL, Tse DM, Chan KS, Woo PC, Lau SK, Peiris JS, Yuen KY. Viral loads in clinical specimens and SARS manifestations. *Emerg Infect Dis.* 2004 Sep;10(9):1550-7. doi: 10.3201/eid1009.040058. PMID: 15498155; PMCID:

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PMC3320271.

4: Yu F, Yan L, Wang N, Yang S, Wang L, Tang Y, Gao G, Wang S, Ma C, Xie R, Wang F, Tan C, Zhu L, Guo Y, Zhang F. Quantitative Detection and Viral Load Analysis of SARS-CoV-2 in Infected Patients. *Clin Infect Dis*. 2020 Mar 28:ciaa345. doi: 10.1093/cid/ciaa345. Epub ahead of print. PMID: 32221523; PMCID: PMC7184442.

5: Pan Y, Zhang D, Yang P, Poon LLM, Wang Q. Viral load of SARS-CoV-2 in clinical samples. *Lancet Infect Dis*. 2020 Apr;20(4):411-412. doi: 10.1016/S1473-3099(20)30113-4. Epub 2020 Feb 24. PMID: 32105638; PMCID: PMC7128099.

6: Xu T, Chen C, Zhu Z, Cui M, Chen C, Dai H, Xue Y. Clinical features and dynamics of viral load in imported and non-imported patients with COVID-19. *Int J Infect Dis*. 2020 May;94:68-71. doi: 10.1016/j.ijid.2020.03.022. Epub 2020 Mar 14. PMID: 32179140.

7: Zou L, Ruan F, Huang M, Liang L, Huang H, Hong Z, Yu J, Kang M, Song Y, Xia J, Guo Q, Song T, He J, Yen HL, Peiris M, Wu J. SARS-CoV-2 Viral Load in Upper Respiratory Specimens of Infected Patients. *N Engl J Med*. 2020 Mar 19;382(12):1177-1179. doi: 10.1056/NEJMc2001737. Epub 2020 Feb 19. PMID: 32074444; PMCID: PMC7121626.

8: Zheng S, Fan J, Yu F, Feng B, Lou B, Zou Q, Xie G, Lin S, Wang R, Yang X, Chen W, Wang Q, Zhang D, Liu Y, Gong R, Ma Z, Lu S, Xiao Y, Gu Y, Zhang J, Yao H, Xu K, Lu X, Wei G, Zhou J, Fang Q, Cai H, Qiu Y, Sheng J, Chen Y, Liang T. Viral load dynamics and disease severity in patients infected with SARS-CoV-2 in Zhejiang province, China, January-March 2020: retrospective cohort study. *BMJ*. 2020 Apr 21;369:m1443. doi: 10.1136/bmj.m1443. PMID: 32317267; PMCID: PMC7190077.

9: To KK, Tsang OT, Leung WS, Tam AR, Wu TC, Lung DC, Yip CC, Cai JP, Chan JM, Chik TS, Lau DP, Choi CY, Chen LL, Chan WM, Chan KH, Ip JD, Ng AC, Poon RW, Luo CT, Cheng VC, Chan JF, Hung IF, Chen Z, Chen H, Yuen KY. Temporal profiles of viral load in posterior oropharyngeal saliva samples and serum antibody responses during infection by SARS-CoV-2: an observational cohort study. *Lancet Infect Dis*. 2020 May;20(5):565-574. doi: 10.1016/S1473-3099(20)30196-1. Epub 2020 Mar 23. PMID: 32213337; PMCID: PMC7158907.

10: Kim JY, Ko JH, Kim Y, Kim YJ, Kim JM, Chung YS, Kim HM, Han MG, Kim SY, Chin BS. Viral Load Kinetics of SARS-CoV-2 Infection in First Two Patients in Korea. *J Korean Med Sci*. 2020 Feb 24;35(7):e86. doi: 10.3346/jkms.2020.35.e86. PMID: 32080991; PMCID: PMC7036338.

11: Chu CM, Poon LL, Cheng VC, Chan KS, Hung IF, Wong MM, Chan KH, Leung WS, Tang BS, Chan VL, Ng WL, Sim TC, Ng PW, Law KI, Tse DM, Peiris JS, Yuen KY. Initial viral load and the outcomes of SARS. *CMAJ*. 2004 Nov 23;171(11):1349-52. doi: 10.1503/cmaj.1040398. PMID: 15557587; PMCID: PMC527336.

12: Wang WK, Chen SY, Liu IJ, Chen YC, Chen HL, Yang CF, Chen PJ, Yeh SH, Kao CL, Huang LM, Hsueh PR, Wang JT, Sheng WH, Fang CT, Hung CC, Hsieh SM, Su CP, Chiang WC, Yang JY, Lin JH, Hsieh SC, Hu HP, Chiang YP, Wang JT, Yang PC, Chang SC; SARS Research Group of the National Taiwan University/National Taiwan

University Hospital. Detection of SARS-associated coronavirus in throat wash and saliva in early diagnosis. *Emerg Infect Dis.* 2004 Jul;10(7):1213-9. doi: 10.3201/eid1007.031113. PMID: 15324540; PMCID: PMC3323313.

13: Mawaddah A, Gendeh HS, Lum SG, Marina MB. Upper respiratory tract sampling in COVID-19. *Malays J Pathol.* 2020 Apr;42(1):23-35. PMID: 32342928.

14: Yoon JG, Yoon J, Song JY, Yoon SY, Lim CS, Seong H, Noh JY, Cheong HJ, Kim WJ. Clinical Significance of a High SARS-CoV-2 Viral Load in the Saliva. *J Korean Med Sci.* 2020 May 25;35(20):e195. doi: 10.3346/jkms.2020.35.e195. PMID: 32449329; PMCID: PMC7246183.

15: Chen Y, Li L. SARS-CoV-2: virus dynamics and host response. *Lancet Infect Dis.* 2020 May;20(5):515-516. doi: 10.1016/S1473-3099(20)30235-8. Epub 2020 Mar 23. PMID: 32213336; PMCID: PMC7156233.

16: Chu CM, Cheng VC, Hung IF, Chan KS, Tang BS, Tsang TH, Chan KH, Yuen KY. Viral load distribution in SARS outbreak. *Emerg Infect Dis.* 2005 Dec;11(12):1882-6. doi: 10.3201/eid1112.040949. PMID: 16485474; PMCID: PMC3367618.

17: Lu YT, Chen PJ, Sheu CY, Liu CL. Viral load and outcome in SARS infection: the role of personal protective equipment in the emergency department. *J Emerg Med.* 2006 Jan;30(1):7-15. doi: 10.1016/j.jemermed.2005.03.011. PMID: 16434329; PMCID: PMC7126311.

18: Yu X, Sun S, Shi Y, Wang H, Zhao R, Sheng J. SARS-CoV-2 viral load in sputum correlates with risk of COVID-19 progression. *Version 2. Crit Care.* 2020 Apr 23;24(1):170. doi: 10.1186/s13054-020-02893-8. PMID: 32326952; PMCID: PMC7179376.

19: Al-Tawfiq JA. Viral loads of SARS-CoV, MERS-CoV and SARS-CoV-2 in respiratory specimens: What have we learned? *Travel Med Infect Dis.* 2020 Mar-Apr;34:101629. doi: 10.1016/j.tmaid.2020.101629. Epub 2020 Mar 13. PMID: 32179122; PMCID: PMC7206223.

20: Sri Santosh T, Parmar R, Anand H, Srikanth K, Saritha M. A Review of Salivary Diagnostics and Its Potential Implication in Detection of COVID-19. *Cureus.* 2020 Apr 17;12(4):e7708. doi: 10.7759/cureus.7708. PMID: 32313785; PMCID: PMC7164701.

21: Cheng VCC, Wong SC, Chen JHK, Yip CCY, Chuang VWM, Tsang OTY, Sridhar S, Chan JFW, Ho PL, Yuen KY. Escalating infection control response to the rapidly evolving epidemiology of the coronavirus disease 2019 (COVID-19) due to SARS-CoV-2 in Hong Kong. *Infect Control Hosp Epidemiol.* 2020 May;41(5):493-498. doi: 10.1017/ice.2020.58. Epub 2020 Mar 5. PMID: 32131908; PMCID: PMC7137535.

22: Azzi L, Carcano G, Gianfagna F, Grossi P, Gasperina DD, Genoni A, Fasano M, Sessa F, Tettamanti L, Carinci F, Maurino V, Rossi A, Tagliabue A, Baj A. Saliva is a reliable tool to detect SARS-CoV-2. *J Infect.* 2020 Apr 14;S0163-4453(20)30213-9. doi: 10.1016/j.jinf.2020.04.005. Epub ahead of print. PMID: 32298676; PMCID: PMC7194805.

23: Huang JT, Ran RX, Lv ZH, Feng LN, Ran CY, Tong YQ, Li D, Su HW, Zhu CL, Qiu SL, Yang J, Xiao MY, Liu MJ, Yang YT, Liu SM, Li Y. Chronological Changes of Viral Shedding in Adult Inpatients with COVID-19 in Wuhan, China. *Clin Infect Dis.* 2020 May 23:ciaa631. doi: 10.1093/cid/ciaa631. Epub ahead of print.

PMID: 32445580.

24: Chen WJ, Yang JY, Lin JH, Fann CS, Osyetrov V, King CC, Chen YM, Chang HL, Kuo HW, Liao F, Ho MS. Nasopharyngeal shedding of severe acute respiratory syndrome-associated coronavirus is associated with genetic polymorphisms. Clin Infect Dis. 2006 Jun 1;42(11):1561-9. doi: 10.1086/503843. Epub 2006 Apr 25. PMID: 16652313; PMCID: PMC7107974.

25: Ho PL, Chau PH, Yip PS, Ooi GC, Khong PL, Ho JC, Wong PC, Ko C, Yan C, Tsang KW. A prediction rule for clinical diagnosis of severe acute respiratory syndrome. Eur Respir J. 2005 Sep;26(3):474-9. doi: 10.1183/09031936.05.1076704. PMID: 16135731.

26: Pitzer VE, Leung GM, Lipsitch M. Estimating variability in the transmission of severe acute respiratory syndrome to household contacts in Hong Kong, China. Am J Epidemiol. 2007 Aug 1;166(3):355-63. doi: 10.1093/aje/kwm082. Epub 2007 May 10. PMID: 17493952; PMCID: PMC7110150.

27: Cheng PK, Wong DA, Tong LK, Ip SM, Lo AC, Lau CS, Yeung EY, Lim WW. Viral shedding patterns of coronavirus in patients with probable severe acute respiratory syndrome. Lancet. 2004 May 22;363(9422):1699-700. doi: 10.1016/S0140-6736(04)16255-7. PMID: 15158632; PMCID: PMC7112423.

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