Implications of COVID-19 for the safe management of general dental practice

A practical guide

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Foreword

The Faculty of General Dental Practice (FGDP[UK]) and the College of General Dentistry (CGDent) are committed to raising the standards of care provided to our patients through postgraduate education and the provision of evidence-based guidance for the dental profession. FGDP(UK) has a long and proud history of producing guidance documents which are highly respected within the profession, and we are delighted to work with the new College of General Dentistry to produce what we believe to be an important set of guidelines at this critical time. Our guidelines are developed primarily by general dental practitioners, and are aimed at colleagues working in general dental practice. This has been particularly important at this critical time, but we could not have delivered this guidance without the support and expertise of many colleagues who work across all fields of health care.

We have faced a huge challenge over the last few months, both as a profession and as a nation, as we deal with the COVID-19 pandemic. Many colleagues have been touched by tragedy, and the dental profession has had to face significant hardship as dental practices across the country battle to support their patients, colleagues and businesses. The level of uncertainty during the pandemic led to fear, anxiety and at times anger, as we struggled to cope with the unknown. It was clear that the profession needed specific guidance to support a safe return to practice in the knowledge that they would be able to continue to provide high quality care for their patients.

As a profession, we are all aware of the desperate need to restore oral health care services for our patients and the wider population, but we are also fully cognisant that this cannot be at the expense of safety. This is an unenviable position to be in, but in the opinion of the FGDP(UK) Executive Board, the situation demands a risk-based approach to identify the risks and provide guidance to mitigate them.

As the academic home for general dental practice, it would seem appropriate that FGDP(UK) in conjunction with CGDent should convene a Task Group to produce guidance for a safe return to practice, with the primary focus on developing a risk-based approach. As part of this risk-based approach, the Task Group have elected to adopt the terminology “aerosol generated exposure” (AGE), to complement “aerosol generating procedure” (AGP). It was considered that this promotes a risk-based approach and encourages dental professionals to consider AGEs from a quantitative perspective, and to consider the risk from droplet and aerosol spread from natural exposures, such as gagging, coughing or spluttering.

We believe we have successfully achieved our objective, and we sincerely hope that this document will support and guide our colleagues through the difficult weeks and months ahead. On behalf of the Task Group Management Team, we would like to acknowledge the enormous effort and dedication of those involved in developing the guidance, particularly given the incredibly short space of time. Task Group members were recruited from a large cross section of our profession and the diversity of roles and attitudes was undoubtedly one of the strengths of the group dynamic. It is a credit

to our profession that we were able to work collaboratively and constructively to reach consensus under extreme time constraints. The Task Group were expertly supported by Dr Vanessa Davies and members of the FGDP(UK) team, and without their direction, expertise and encouragement, this would not have been possible.

We would strongly encourage all dental professionals to read these guidelines and consider how they can be adopted within their own practice setting. This is a fluid document which reflects the novel nature of COVID-19, and this guidance will need to evolve as our scientific knowledge and understanding expands.

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Introduction

The COVID-19 pandemic has been one of the greatest challenges humanity has faced in the last century. The SARS-CoV-2 virus has been responsible for nearly 8 million cases and at least 428,780 global deaths. The UK has been severely affected with over 41,000 reported deaths at the time of writing (13th June 2020; for latest figures see www.worldometers.info). In addition, the virus, which is spread through droplets, contact and possibly opportunistic aerosols has also taken the lives of 245 health and social care workers in the UK since March 2020. With no effective medication or vaccine currently available, the main mitigation measures have been social isolating and mass lock down for the UK dental profession.

In response to the pandemic, the UK Government introduced lockdown measures on 23rd March 2020. This had a significant impact on the daily lives of its citizens, including dentists and their practices. Across the UK, dental practices were instructed to limit the scope of practice, which caused significant disruption to the provision of oral health services. Access to urgent and emergency care was re-established by introducing a network of Urgent Dental Centres that deal with the increasing demand for care. Cessation of routine dental services has undoubtedly had a profound effect on the availability of urgent care, and the impact on the oral health of the UK population cannot be overestimated.

At the current time, the UK Government has declared a COVID-19 "**alert level 4**", which indicates that the risk of transmission is "**severe**", with a high risk of infectivity. The NHS COVID Alert Level is a five-point system which ranks the threat level of the virus on a scale of 1 (safe) to 5 (critical). The threat level is adjusted according to medical and scientific data including the R number (rate of infection) and the number of infections recorded. The system has been criticised due to the weakness of the data used and the subjectivity of the scale. However, it does provide an indication of threat, no matter how subjective, and it is linked to the social distancing measures imposed within the UK.

An increased mortality rate of health care workers from black, Asian, and minority ethnic (BAME) backgrounds has been widely reported. There is strong evidence to suggest that these specific groups of individuals may be at greater risk of serious illness, complications and death following an infection with COVID-19. This would indicate that many factors need to be taken into consideration in terms of the risk of contracting COVID-19, and in terms of morbidity and mortality. Although the cause is still not fully understood, it is thought that the high incidence of co-morbidities, such as diabetes, hypertension, and obesity, which are all disproportionately represented within this group, may be underlying factors. This supports a risk-based approach to managing the pandemic as part of a strategy to deliver oral health services within a safe environment. Those at increased risk of serious sequelae from COVID-19 infection are members of our teams, our patient bases, our families and friends. It is our duty to recognise this as a central pillar of our risk mitigation approach.

At the end of May 2020, each devolved administration introduced a separate roadmap for supporting a gradual reopening of dental practices across the UK. The priority remains safety, and this guide provides a framework for dental teams to provide a risk assessment-based strategy for the safe treatment of patients at practice level.

In this document we propose that in considering the risk of transmission of SARS-CoV-2 through both natural droplets and aerosols, the term Aerosol Generating Procedure (AGP) is complemented by the term Aerosol Generated Exposure (AGE).

Many common dental procedures have now been classified as aerosol-generating or non-aerosol-generating, and practitioners should continue to follow the national protocols to which they are subject in this regard. However, consideration of AGE in assessing the quantifiable risk of transmission can also take into account the duration of a procedure, patient factors (such as respiratory disease), the ability to employ mitigation factors and the probability of their success. Natural exposures, which include contact transmission and both droplet and aerosol caused by coughing, sneezing and exposure to respiratory droplets during expiration, can also be factored in.

Consideration of AGE in addition to national requirements is therefore a comprehensive approach which supports dental practices and professionals in assessing the transmission risks to which both the dental team and the patient are exposed in the dental environment.

The role and aim of the guidance

1. The guidance aims to facilitate a safe and timely return to the practice of dentistry within primary care. This is vital to securing the oral health of the nation, and to maintaining public confidence in the profession.

2. The guidance supports dentists to take a risk and evidence-based approach to providing care in the current circumstances. It is structured to be flexible enough to provide support and set out minimum requirements, irrespective of the national COVID-19 alert level. It enables dental health care workers (DHCW) to adjust measures depending on their individual risks and those of their patients. Dental professionals and patients may have different risk profiles which may include the practice environment, the geographical location, scope of practice and personal circumstances.

3. The guidance helps the dental profession to identify risks and mitigate them appropriately, as well as develop specific strategies for their individual practice needs, rather than being a “one size fits all” for the whole profession. It aims to be pragmatic about what can be safely and practically achieved in primary dental care with limited resources. All team members should undertake a risk assessment; those with particular risks may need additional measures to protect themselves.

4. The guidance seeks to be neutral and objective, without bias towards any given business model for the delivery of primary dental care.

5. The guidance is based on the best available evidence. High quality evidence for COVID-19 in relation to primary dental care is currently extremely limited. We draw on relevant best practice from other professions and other countries, and the common judgment of a large, diverse group of professionals.

6. We are grateful to the diverse group of professionals and their organisations who have contributed to the development of this guidance. Some of those organisations have developed their own advice for return to practise. The British Dental Association’s COVID Special Guidance on Returning to Routine Care offers practical complementary advice to our own guide.

The guidance and government requirements, statutory emergency measures and the regulation of dental professionals and practices

In the management of the pandemic across the UK and its nations, to whose governments health care responsibility is devolved, a combination of local NHS

measures, Chief Dental Officers' communications and statutory provisions have determined which dental services the public can receive (and are likely to do so for the foreseeable future).

The guidance supports measures for safe practice which may vary according to the national alert level. These can be applied to any strategy or road map for the resumption of dental services.

All Dental Health Care Workers (DHCW), whether NHS or in the private sector, will need to consider not only this guidance but also the applicable national situation and advice which may have been given, or requirements set by national authorities where there is a contractual or legal obligation to do so. We signpost some of this in the five technical sections of this guidance.

The GDC has said the following (21st May 2020) about professional judgement and regulation:

> *'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 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 health care 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****.'*

As regards practice-level regulation, the CQC (for example) said on 19th May 2020:

> *'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.*
>
> *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.'*

We have also considered FGDP(UK)'s *Standards in Dentistry* in general, and sections 1.7 and 1.8 in particular, regarding the responsibility of dentists to remain abreast of minimum standards for safe practice in the interests of patients.

We believe that following this guidance together with the considerations set out above can provide a sound basis for a safe return to general dental practice across the UK. As a very general principle, the further a practitioner departs from the guidance and other reference points, they would be well advised to document thoroughly and contemporaneously their reasons for doing so. The focus of the guidance is on how to practise where the alert level is at 5, 4 or 3 (critical reducing to substantial). However, practitioners should note that where the mitigations in place for higher alert levels have led to improved outcomes for patients and safer, more caring, efficient and responsive service and better-led practices, we would encourage the retention of those measures into a "new normal" when the alert level has reduced to 1.

How the guidance has been developed

The dental profession has a rich diversity of sub-specialities as well as different business models for delivering dental care. These both complement and compete with each other, so there may be different priorities and viewpoints on practice resulting from the delivery model. The guidance aims to meet these varied needs, whilst maintaining as its top priorities the delivery of safe, appropriately risk-differentiated clinical care to patients and to ensure that the personal risks to staff are mitigated by adopting an individualised risk assessment for all members of the dental team.

The Task Group membership reflects the diversity of specialisms, the range of delivery models and geographical differences, including across the four nations of the UK (see Contributors section for full details of members). It includes expertise from lay patients and the wider dental team (DHCW and practice management), academia, the medical profession, trade unions and defence organisations.

The risk- and evidence-based approach

No guidance can eliminate risk, but this guidance provides a framework that assists in identifying and mitigating the key risks to which the dental profession and patients may be exposed. The COVID-19 landscape is moving rapidly with new information appearing daily. The dental profession has had less exposure to COVID-19 than the

medical profession and as a result, the evidence for best practice and lessons from exposure are much more limited. The guidance is based on a synthesis of best evidence from reliable sources which are publicly available and cited in the bibliography.

The guidance adopts the ABC (Aspirational, Basic, Conditional) approach to measures which are to be taken, with Basic measures being those which represent a minimum standard to be put in place. This is consistent with other guidance and standards issued by FGDP(UK).

The **"**patient journey" is at the heart of the risk assessment. This will be the greatest challenge in the delivery of dental services in the primary care setting, where there may be limitations in space, other resources and finances. The dental team must remain mindful of the challenges patients may also be facing in terms of their own personal circumstances as well as their oral health. Concerns about how safe it currently is to go back to the dentist, together with confusion in general guidance to the public on interactions outside the home, may exacerbate pre-existing fear of dental treatment. The measures in the guidance seek to address this.

A key feature of the guidance is the adoption of personalised risk assessment for dentists and other members of the dental team. We already know that people with certain characteristics and co-morbidities are more likely to suffer adverse outcomes if they become infected with COVID-19. It is very important to stress that this does **not** mean that people with a higher risk *from* the infection are at greater risk of *transmitting* the infection, and great care should be taken with this distinction. We say more about this below and in the relevant technical sections 1-5.

We would always recommend documenting any risk assessments, providing helpful evidence if needed later.

In summary, good evidence, risk assessment for DHCW, consideration of patient needs and the overall COVID-19 alert level are the foundations on which safety – and a return to practise - are built.

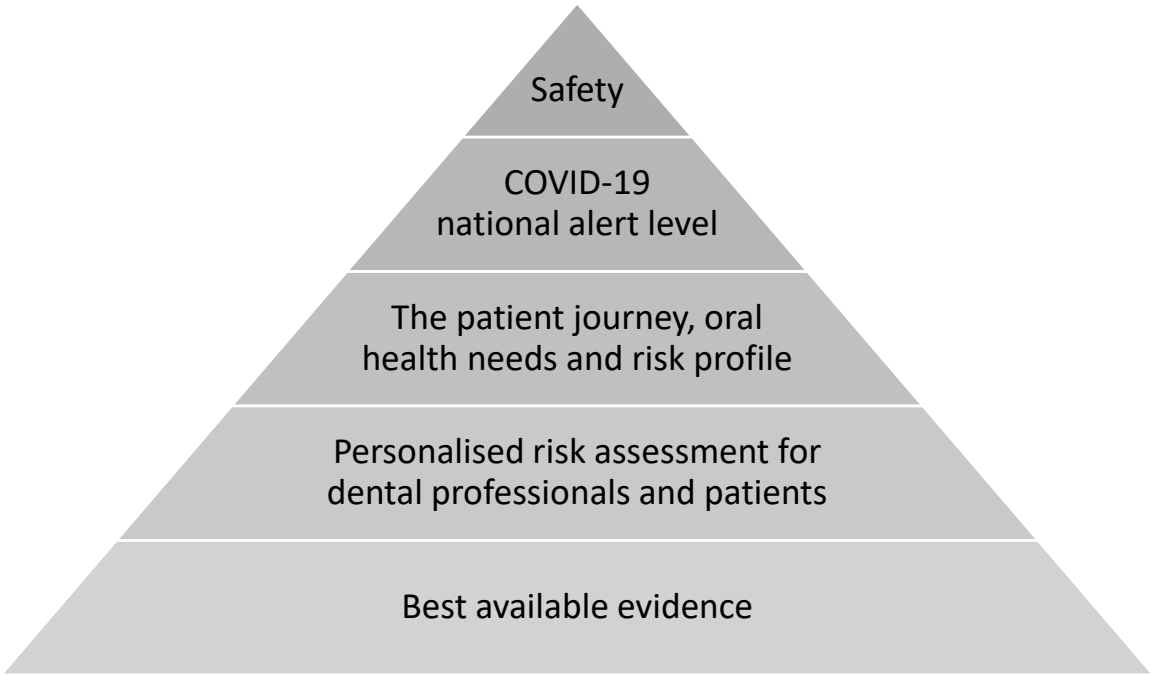

Figure 1: The hierarchy for developing a risk-based approach to mitigation in relation to COVID-19

How the guidance is structured

The guidance is structured to provide a quick and easy-to-use tool for practice, signposting to other resources. Drawing on the guidance enables members of the dental team to:

i. Understand the key areas of the patient journey which may be affected during the pandemic.
ii. Undertake a personalised risk assessment in relation to the risk implication of a COVID-19 infection (co-morbidities/age/sex/ethnicity/pregnancy etc.) for patients and staff, as this will impact on additional adaptations that may need to be considered.
iii. Appreciate the context of the guidance in relation of the UK alert level 1-5 (or any other phasing used by any the four nations of the UK).
iv. Use the ABC approach as in other FGDP(UK) guidance to identify which measures are the minimum necessary, or most relevant.

We have divided the guidance into five sections, the first four of which reflect the "patient journey" and the fifth concerning general management of practice matters, which underpins the patient journey. Each is explained in more detail at the start of the relevant section:

i. Pre-appointment
ii. Patient attendance (pre-treatment)

iii. During treatment
iv. After treatment
v. Management/governance tasks

Each section consists of a summary narrative and a series of tables or matrices.

Task Group member opinions were collated in a manner loosely based on the Delphi approach to identify priority risk areas, and an in-depth review process within each of the domains identified. This included a comprehensive review of the current evidence. Potential mitigations in the context of the relevant alert level, as well as any additional mitigation measures for practitioners and patients who may be vulnerable to more adverse outcomes from COVID-19, were identified.

The resulting information is set out in a table which can be used by practitioners as a quick reference guide to determine the risks for each part of the patient journey. It clearly identifies any measures that may be required in their practice in light of the alert level at that time. It also highlights additional measures that they should implement for any staff members or patients who may be vulnerable to COVID-19.

A narrative accompanies the matrices and this highlights key issues and areas which may require particular attention or where nuance or difference in views need to be understood.

The measures set out are not prescriptive, but identify the risk levels and the proportionate measures to take, enabling dentists to exercise their professional judgment accordingly. A further explanation of how to use the tables is below, but there are additional, generic ("pervasive") points to bear in mind as well.

Pervasive points

We have identified a number of issues and themes which need to be kept in mind throughout the technical sections, and as a result, are not explicitly repeated within those sections. These issues remain extremely important and should be seen as an integral part of the guidance.

Many of these are rooted in the GDC's nine principles which govern the conduct of dental professionals. Some of these principles may have added considerations as a result of the COVID-19 pandemic which may be less obvious to practitioners, or merit reinforcing in order to enhance public confidence in the return to practice.

Standards by which dentists' services are regulated at a practice level are also deemed in our guidance to be pervasive and are not repeated explicitly in the technical sections. The Care Quality Commission (CQC) requirements, for example, of safe, effective, caring, responsive to people's needs and well-led are also assumed, as are

the analogous standards at practice level set by Health Education and Improvement Wales (HEIW), Healthcare Improvement Scotland (HIS) and the Regulation and Quality Improvement Authority (RQIA). Again, the COVID-19 situation may bring some of those more to the forefront than previously.

Practitioners should fully take into account the advice disseminated by the respective Chief Dental Officers for each Nation of the UK.

Communication and consent

The measures recommended will mean significant changes to the way dentistry is delivered. Effective, meaningful communication about these is vital to ensuring not only that service is well-received, but that valid consent to treatment has been received from the patient.

Normal operating protocols

Any procedure that would reasonably be considered normal operational standards (e.g. instruments ready, flushing waterlines, no PPE in non-clinical areas such as reception) is not repeated in the technical section.

Anything which is in place as part of national guidance to the population – such as, but not limited to, whether to wear a (non-medical) face mask in public – has not been specifically referred to in the guidance.

Human factors overall in the return to the workplace

The issues set out previously have an underlying common theme: human factors. We can only see as far as our personal horizon, and we must understand that a key purpose of this guidance is to expand our horizon to enable us to see further with greater clarity. Errors that occur are often the result of poor systems and processes; if we redesign the systems to cross check and make it easier to do the right thing, we will reduce these errors.

We should create a culture of informing others of our errors to allow learning to occur, in order to reduce recurrence. In order to achieve this, we must all take responsibility for safety regardless of our position or environment.

We recognise the universal nature of human fallibility and that errors will inevitably occur. With those assumptions firmly embedded, it is clear there is a requirement to design systems within the workplace to minimise the likelihood of errors occurring or their impact. We know that distraction, familiarity, arrogance, tiredness, stress and lack

of resources all lead to reductions in performance and contribute to avoidable errors. We cannot remove these contributing factors from our day to day lives so we must look at ways of mitigating their impact.

When we design the workplace in accordance with this guidance to accommodate the limitations of the humans working within it, the following areas will require vigilance:

- Communication
- Distraction
- Lack of resources
- Stress
- Complacency
- Lack of teamwork
- Pressure
- Lack of awareness
- Lack of knowledge
- Fatigue
- Lack of assertiveness
- Norms

The technical sections

The narrative explanations

The narratives provide additional notes which complement the details within the matrices. They also provide context, and where there exists debate on an issue, they provide a rationale.

Bibliography

We have included an extensive bibliography at the end of this document to highlight the broad range of resources and evidence that was used to create this guidance.

How to read the tables/risk matrices

Domain: Refers to the aspects of the patient journey in question (or the management section) and the sub-topics within it which the guidance covers. This is also repeated at the start of each technical section.

Risk Status: This part of the table describes the risk in question and makes a judgment about how likely the issue is to occur, and what the effect of it would be without the specific measures or mitigating actions listed. The likelihood is measured as one of *rare, unlikely, possible, likely* or *almost certain.* The severity of the impact is measured as one of *negligible, minor, moderate, major* or *catastrophic.*

The mitigating actions we set out are judged to be proportionate to the risk status, i.e. the most robust and stringent measures will be in place for risks with a rating of *almost certain/catastrophic* and the least stringent measures (or none at all) for *rare/negligible* rated risks.

ABC based risk mitigation measures: The steps which should be taken to ensure safe practice. "**General mitigations**" are described in relatively limited detail and intended to apply across a domain, and are to be read as basic requirements (so "B" category). "**A**" measures are **aspirational** and represent the best possible practice. "**B**" (**basic**) measures represent a minimum standard which must be in place for the procedures or topic in question and reflect a balance of the safety requirements relative to the risk and alert level and practical operating and resourcing constraints. "**C**" measures are **conditional**, i.e. they denote basic measures (minimum requirements) in specific circumstances, e.g. if a dentist or a patient are in a high-risk category for adverse outcomes from COVID-19 infection. **"Specific mitigations"** indicates where a measure we recommend is differentiated according to the COVID-19 alert level in place.

COVID-19 alert level: Refers to the UK government 5-level alert description (see our FAQ for fuller framework), where 5 is critical, 4 is severe, 3 is substantial, 2 is moderate and 1 is low. Because the impact on safe practice is very similar, we have generally grouped levels 5 and 4 together, and often 3, 4 and 5. Once the alert level has returned to 1, general dental practice minimum standards may well be those which existed before COVID-19 arrived in the UK.

Not in scope

The focus of this guidance is on general dental practice in a primary care setting. Where a procedure is not routinely provided in that setting, it has not been covered in this guidance. For example, the following are not covered:

- Inhalation sedation
- Domiciliary care
- Secondary care
- Dental laboratories

General dental practitioners who do offer these services can use the approach adopted in the guidance, i.e. based on risk assessments and in accordance with the nine GDC principles, to make a professional judgment about what mitigating measures might need to be in place relevant to the national alert level on a case by case basis.

Section 1: Pre-appointment

Pre-appointment preparation is essential in providing safe care, ensuring patients are well informed and suitably prepared ahead of their visit to the dental practice. Communication is central to mitigating risk and establishing expectations of how and what dentistry can be delivered within the limitations of the pandemic.

Box 1: Pre-appointment key points

- Up to date information should be available on line and widely disseminated to patients
- Patient communication ahead of dental practice visit is vital
- Digital communication should be encouraged but other methods made readily available
- Administrative tasks should be undertaken ahead of the visit where possible and should include:
  - Patient questionnaire
  - COVID-19 screening
  - Medical history
  - Patient forms – FP17, estimate, consent
  - Information on payment
- Review of technology should be considered with appropriate support and training put in place

Patient information should be available online and contact should be made with patients prior to their appointment. Digital communication should be utilised wherever possible but other forms of contact should be available to ensure that access to information is readily available for all. Communication for various patient groups will need to be considered, such as language barriers, patients with additional needs and children and young people with carers. Practices may need to consider providing digital literacy support for patients and staff to encourage online channel usage in addition to aiding in shared decision making and process management.

It is important to reduce administrative tasks which would previously have been carried out at the reception desk or surgery, in order to minimise face to face contact and reduce time spent at the dental practice. Key considerations include a pre-attendance COVID-19 screening assessment, updated medical history, training and support and the use of digital technology for communication. Video conferencing has become increasingly popular and offers a useful alternative method of engaging with patients.

Practices should consider preparing a digital strategy for communication using digital means to support social distancing. Practices may wish to consider preparation of a digital pre-appointment pack (PAP) to include all practice forms (patient questionnaire, medical history, FP17, risk assessments, patient preparation information, consent forms and payment methods) for patients/carers to complete and return in advance of their visit.

A health risk assessment should be considered as part of pre-planning to take into account ethnicity, age, sex, pre-existing health conditions and pregnancy. Early evidence indicates an increased risk of COVID-19 deaths relating to people from a black, Asian or minority ethnic (BAME) backgrounds. Increased COVID-19 mortality

risk has also been reported for men, people of older age, and individuals with pre-existing medical conditions, such as heart and circulatory disease including high blood pressure, diabetes and being overweight. Patient risk assessments should be undertaken and appropriate mitigations put in place.

At higher alert levels, practices should also consider appropriate signage at the entrance doors with a closed-door policy to minimise the risk of infection transmission within the practice.

Matrix 1: Pre-appointment		
Domain in the patient journey	**Potential risk status and likelihood**	**ABC based risk mitigation measures**
Pre-appointment *Access/information/booking appointments*	*Describe the impact of the risk and score severity and likelihood* *(Negligible, minor, moderate, major, catastrophic)* *(Rare, unlikely, possible, likely, almost certain)*	***A** - Aspirational advice/best practice* ***B** - Basic minimum requirements* ***C** - Conditional advice based on the risk of high alert levels (1-5) and for those that may have a higher risk of COVID-19 related complications (see page 7)*
	Potential impact: Detrimental impact on access to services. There is a risk of miscommunication with patients and a lack of understanding of specific needs. Impact of flow of patients through the ineffective zoning of patient diaries. Likelihood of impact: Almost certain Severity: Minor	**General mitigation** measures (ABC approach) **A** = Digital media consultation considering where possible any communication issues that some patients may have. Using digital media to facilitate a better understanding of the patient journey. Practices should consider developing a practice specific pre-appointment pack. **B** = Using all forms of communication (digital/telephone/written) to deliver a consistent message. Digital Pre-appt pack to send to patients, e.g. medical history/FP17/GDPR Consent/Patient preparation information (what to expect from us and we expect from patients/escorts). The patients' medical history should be checked in order to ensure they are not experiencing any COVID-19 symptoms. Also, patients who are shielding or have any specific health issues should be identified. Zoning of appointment booking to allow appropriate recognition of patient's circumstances (and risks of infectivity, or if self isolating). Sign posting should be used to access other services appropriately if required. Patients should be directed to the practice website where they can access further information as well as any advice (self-help). Patients should be advised to only bring essential items. **C** = In the event that it is not possible to use digital means, a pre-appt pack can be sent to the patient. Consider email as a method to receive pictures of prescriptions or pathology (interpret with caution). Special considerations may be required for those who may not speak English and the use of telephone translation as well as other services to deal with any communication issues. Application use of text translators which may address the needs of those who wear hearing aids should be considered.

Specific mitigating measures in the context of COVID-19 alert levels	COVID-19 alert level 4-5	All appointments made via remote access (telephone/video/email/SMS). There will be a closed-door policy and all patients and visitors will be directed to follow instructions on the door.
	COVID-19 alert level 3	All appointments made via remote access (telephone/video/email/SMS). There will be a closed-door policy and all patients and visitors will be directed to follow instructions on the door.
	COVID-19 alert level 1-2	There will be an open-door policy but patients and visitors will be directed to follow instructions on the door.
Conditional mitigation measures for patients who may be at higher risk of COVID-19 consequences	Practices may need to implement extra measures to ensure patients and other members of the public who may have conditions such as learning difficulties and disabilities, visual or hearing impairments, are catered for in terms of making appointments and liaising with carers.	

Section 2: Patient attendance (pre-treatment)

This section covers patient attendance at the practice from entering the building to accessing the clinical area. The focus is on pre-assessment and management of the reception area in terms of social isolation, with the primary focus on protecting patients and reception staff.

Box 2: Patience attendance (pre-treatment) key points

- Communicate arrangements and protocol for social distancing
- Minimise contamination of public areas by:
  - Offering storage of bags, coats, etc.
  - Provide antiseptic hand gel on entrance and exit
  - Minimise waiting times in common areas
  - Discourage use of toilet facilities
  - Adoption of high level of infection control and prevention
- Protection of reception staff by social distancing, wearing of appropriate PPE, and or barrier screens
- Appointment times tailored to new ways of working
- Temporal and spatial zoning for vulnerable patients
- Temperature checks deemed unreliable
- Testing seen as aspirational
- Ongoing training for all staff

Communication is key to the smooth and safe running of the practice, and patients should already be aware of the current protocols regarding their safe entry into the building in view of the pre-visit protocols (see Section 1). Ideally, this should have been discussed at the telephone triage appointment, with additional information available on the practice website, social media and direct electronic communications with the patient.

Alternative arrangements will need to be considered to ensure all patients have access to the information required, including those who are unable to access digital media or require information in different formats. Clear signage and information should be displayed at the practice to support the patient journey.

To minimise the risk of contamination, patients will be requested to comply with updated practice infection control and prevention policies, including the use of antiseptic hand gel on entry, leaving coats and bags in a designated area, minimising the use of the toilet area and adopting high infection control and prevention standards. The use of safety screens at the reception desk should be considered as a method of protection for both staff and patients. Alternatively, the use of surgical masks and visors by all reception staff in addition to strict social distancing protocols could be considered as an alternative.

All patients attending the practice need to be asked the current COVID-19 screening questions on entry. Any patient with signs or symptoms suggestive of COVID-19 should be advised to return home immediately and contact NHS 111. If urgent or

emergency dental treatment is indicated in a patient with suspected COVID-19, appropriate referral should be arranged.

Universal temperature checks have been widely advocated, but some methods of temperature testing (such as the non-contact method) have been shown to be unreliable (explained in Matrix 2). Temperature checks may be appropriate as part of a risk assessment or for staff or patients who are feeling unwell.

Antigen and antibody screening, when available, are likely to be an important adjunct to providing safe care within the dental practice environment, contributing to a reduced risk of transmission for both patients and staff. At the time of developing this guidance, issues exist around availability, reliability and cost of both antigen and antibody tests, and are not included within the current guidance document.

To support the principles of social distancing, patients will be encouraged to attend alone (where possible), arrive promptly at the time of their appointment and have completed all pre-appointment paperwork prior to arrival. Alternative arrangements will need to be available to accommodate any patient who is unable to comply with this. Appropriate infection control protocols will need to be established and followed in relation to form filling and paperwork if required.

Appointment intervals may need to be lengthened to allow for any additional infection prevention and control arrangements, with appointment times staggered to minimise the waiting time for patients and facilitate the maintenance of social distancing within the reception area. Every effort should be made to avoid delays and ideally the patient should be taken directly into the surgery as quickly as possible following arrival.

Infection with SARS-CoV-2 is via three potential modes of transmission: contact, droplets and airborne particles. The most common mode of transmission is contact spread, by direct or indirect contact. This is particularly important within the reception area where compromised hand hygiene or inadequate social distancing can lead to contamination from surfaces, such as door handles, desktops, or chairs. Droplet transmission is due to contamination from infected droplets (>5 μm), including saliva, coming in contact with mucous membranes, such as the nose, mouth or conjunctiva. Such droplets are produced by coughing and sneezing and can travel significant distances. Protection is provided by social distancing (maintaining a distance of at least 2 m) and wearing appropriate PPE. When droplets land on a surface they form fomites, which can then be transferred through contact with contaminated surfaces. High standards of infection control and prevention both in the surgery and throughout the practice are critical in safeguarding patients and staff. Within the dental surgery, airborne transmission is also a potential issue through the production of aerosols, which is addressed in Section 3.

It is clear that contact and droplet transmission are highly important vectors in the potential transmission of COVID-19 within the dental practice. Staff need to be cognisant of this and ensure that protocols are in place to mitigate these risks.

The reception area should be designed to support social distancing by including designated seating, clear patient/staff pathways, laminated notices and floor markings. Consideration should be given to separation of staff and the provision of barrier screens as a mitigation for droplet transmission.

Thought must be given to the provision of care for patients who have been categorised as vulnerable (see current guidance). Spatial or temporal separation through zoning may be appropriate to support protection. A risk assessment of patients with mobility issues should be undertaken to minimise the possibility of falls and contamination from, or of, their mobility device. An individual case by case risk assessment of whether parents/carers/guardians should be present in the surgery during treatment should be considered. If their presence within the surgery is deemed necessary, the safety and comfort of both the patient and the carer should be taken into consideration.

A clear and documented training programme will need to be followed to support this guidance, with regular reviews to update as required. All staff need to understand the importance of following these guidelines and managers will be required to carry out regular audits to ensure compliance.

Matrix 2: Patient attendance (pre-treatment)		
Domain in the patient journey	**Potential risk status and likelihood**	**ABC based risk mitigation measures**
Patient attendance *Pre-treatment preparation*	*Describe the impact of the risk and score severity and likelihood* *(Negligible, minor, moderate, major, catastrophic)* *(Rare, unlikely, possible, likely, almost certain)*	***A** - Aspirational advice/best practice* ***B** - Basic minimum requirements* ***C** - Conditional advice based on the risk of high alert levels (1-5) and for those that may have a higher risk of COVID-19 related complications (see page 7)*
	Potential impact: Managing the arrival stage of the patient journey will affect patient and staff safety and the ability to access services. Likelihood of impact: Possible Severity: Major	**General mitigation** measures (ABC approach) **B** - Patients should have already undertaken a COVID-19 risk assessment before attending which should comprise a medical history, COVID-19 screening. This needs to updated and confirmed on arrival. It should be noted that many patients with a normal temperature (asymptomatic) may still be infectious. There is some doubt as to the reliability of non-touch infra-red scanning thermometers. Some patients with dental infections may present with a high temperature and thus be denied treatment. We advise to use temperature checks based on a risk assessment on a case-by-case basis. Patients' personal items/valuables should be stored safely outside clinical areas and cross contamination avoided by thorough decontamination processes. Door handles and other surfaces and items that have been touched by patients/staff should also be cleaned.
Specific mitigating measures in the context of COVID-19 alert levels	COVID-19 alert level 4-5	At higher alert levels each practice should address the need for specific measures, such as Perspex screens and social distancing measures.
	COVID-19 alert level 3	At higher alert levels each practice should address the need for specific measures, such as Perspex screens and social distancing measures.
	COVID-19 alert level 1-2	At low alert levels each practice should reassess the need for specific measures, such as Perspex screens and social distancing measures.

Conditional mitigation measures to protect patients who may be at higher risk of COVID-19 consequences	In line with national guidance, consideration should be given to simple face coverings. A risk assessment of patients with mobility issues should be undertaken to minimise the possibility of falls and contamination of their mobility device. There should be an individual case by case risk assessment of whether parents/carers or guardians should be present in the surgery during treatment and make sure that this is done as safely as possible where this is deemed essential.

Section 3: During treatment

In pandemics of highly infectious diseases, such as COVID-19, dental teams and patients may be at a potentially higher risk of infection due to their close proximity during appointments. It is imperative that risk assessments are carried out to ensure the safety of both staff and patients. During treatment, consideration should be given to PPE, procedural risk mitigation, decontamination and medical emergencies.

Box 3: During treatment key points

- Aerosol generated exposures are a potential risk within the dental surgery
- Standard IPC protocols apply
- AGE needs to be considered as high risk/low risk
- Standard PPE for low risk procedures considered as BASIC
- High risk procedures require FFP2/3, visor and gown as BASIC
- Use of rubber dam and high-volume suction are important mitigating measures
- Fallow period of 60mins required where risk of AGE is high

Risk stratification of dental aerosol generating procedures

Transmission of COVID-19 via aerosolisation has been identified by Public Health England as a potential risk within the dental surgery due to the production of aerosol which could be contaminated with SARS-CoV-2 during various dental procedures. This has led to widespread restriction of dental Aerosol Generating Procedures (AGPs) in order to safeguard patients and DHCW. As a result, there has been limited access to certain dental treatments, with AGPs only undertaken when absolutely necessary. Enhanced levels of PPE have been advocated for all AGPs.

An AGP has been described as a medical or dental intervention that has the potential of creating aerosol. It is important to note that aerosols are also produced naturally during breathing, speaking, sneezing and coughing, and these events must be acknowledged as a significant mode of transmission of COVID-19, which is a respiratory disease. PHE has provided guidance on what should be considered an AGP, and a more detailed description is provided by the Australian Dental Association.

It is important to acknowledge that the risks within the dental practice should also include natural aerosols. We therefore use the term Aerosol Generated Exposure (AGE), complementary to AGP, to highlight the risk of all aerosolisation, and not just those which are produced by dental procedures.

Consideration of AGE also helps capture, in assessing risk, that all dental visits involve risk of exposure to aerosols and droplets, whether they be naturally occurring or produced by mechanical interventions.

Dental personnel need to appreciate this and take the appropriate precautions in relation to social distancing (two metres) and the use of the correct PPE.

Aerosol generated exposures will vary in nature, size and risk, and may be considered as a dynamic continuum to aid risk assessment, the purpose of which in any health science is to reduce overall harm to human health. We believe that consideration of AGE as well as AGP will therefore generate the least harm while still recognising patient dignity and autonomy. In some circumstances, this will lead to additional precautions being taken, in others it may remove a barrier to patients accessing the care they need. Our model therefore endeavours to stratify the risk of exposure (AGE), and includes consideration of a number of factors, including:

- Exposure to aerosols and droplets, which can arise from natural sources (coughing, sneezing, talking and respiratory function)
- Type of procedure
- Level of aerosol created
- Length of time of procedure
- Utilisation of mitigating factors, such as high-volume aspiration or using rubber dam

For obvious reasons, to date there has been no evidence in support of such a stratified approach to manage COVID-19 in dentistry. However, predictive analytics has been adopted more widely in the COVID-19 crisis.

Combining a stratified approach with predictive analytics identifies risk in a non-binary manner. Accordingly, a sixty-minute full mouth root surface debridement will be assessed to be more likely to pose a greater risk than a five-minute access cavity under rubber dam with the use of high-volume suction, which in turn presents a greater risk than dental examination without the use of a 3-in-1.

We therefore advocate this comprehensive, multi-factorial approach in addition to compliance with national protocols.

Table 1: Risk stratification for Aerosol Generated Exposure (AGE)		
PROCEDURE	**LOW RISK** **(aerosol exposure)**	**HIGH RISK** **(aerosol exposure)**
Oral hygiene instruction	Maintaining social distance or wearing PPE	X
Tooth polishing	Minimal use of prophy paste/reduced speed revolutions/tooth isolation / high volume suction. Avoid if possible at high alert levels, due to risk of splatter.	Avoid tooth polishing if unable to mitigate risk of splatter during high alert levels, unless already using enhanced PPE.
Extra-oral radiography/ CBCT	Maintaining social distance or wearing PPE	X
Intra-oral radiography (*Risk assess the need in relation to COVID-19*)	Those without a cough reflex/adult, well tolerated	Poorly tolerated (e.g. cough reflex or paediatric pts) Full mouth peri-apical radiographs (due to time)
Dental photography	Extra oral Intra oral (if unlikely to trigger cough reflex)	Intra oral (if likely to trigger cough reflex)
Clinical examination	Avoiding 3-in-1 syringe	With 3-in-1 syringe
Direct restoration of a tooth	Provisional restoration Without use of high-speed handpieces but with appropriate isolation 3-in-1 syringe - irrigation function only followed by low pressure air flow	Definitive restoration Use of high-speed handpieces (rubber dam and high-volume aspiration should be used to mitigate risk)
(Re)cementation crown or bridge	Provisional (re)cementation without use of powered instruments but with appropriate isolation 3-in-1 syringe - irrigation function only followed by low pressure air flow	Definitive cementation
Removable prosthodontics	When well tolerated for all stages	When poorly tolerated for all stages
Adjustment and repair of removable prosthesis	With disinfection of prosthesis and use of appropriate PPE	X
Extraction of tooth	Non-surgical extraction	Surgical extraction involving bone removal / sectioning
Restoration or repair of implant retained prosthesis	Restoration or repair **NOT** requiring high-speed handpieces	Restoration or repair requiring high-speed handpieces

Surgical implant placement	X	Avoid complex surgery (especially involving the maxillary sinus) during high alert levels.
Endodontic procedures	Simple access to carious broken tooth with hand excavation and dressing	Rubber dam isolation and high-volume suction
Periodontal procedures	Periodontal debridement with hand instruments using high-volume aspiration	Using ultrasonic scalers
Fissure sealants	Fissure sealants where the tooth can be adequately isolated and adequate moisture control is obtained	X
Minimally invasive restoration	Avoid use of high-speed handpieces, Mitigation using rubber dam and high-volume aspiration 3-in-1 syringe - irrigation function only followed by low pressure air flow	High-speed handpieces used Mitigation using rubber dam and high-volume aspiration
Incise and drain abscess	Mitigation with use of high-volume aspiration	X
Orthodontic treatment	Debonding or repairs avoiding use of high-speed handpieces	High-speed handpieces use or multiple repairs/extensive use of 3 in 1
Assessment of oral soft tissues	Clinical examination (avoid initiating cough reflex)	Examination of posterior oro-pharynx likely to induce a cough reflex

Adapted with permission from Ashley, M. Guidelines for prioritisation of patient care during COVID-19 recovery phases, restorative dentistry. RD-UK. In progress. [Accessed ahead of publication 2020 May 29].

Table 1 should not be considered as a comprehensive list but is simply included for illustrative purposes. It must also be stressed that various dental specialists' groups are providing excellent advice and guidance on particular procedures which will be highly relevant to general dental practice. This additional guidance and information may be useful in supporting a risk-based decision.

The 3-in-1 should be used with caution, and combined use of air and water avoided. Treatment offered should be based on risk assessment of patient, operator, time and difficulty of procedure.

High risk exposure (AGE) should be avoided whenever possible during a high alert level (4/5), unless a risk assessment indicates that a low-risk stabilisation or delay would be detrimental to the patient's oral or systemic health or well-being. In such circumstances, careful documentation of the risk assessment is important, including justification of the decision for high AGE risk.

Personal Protective Equipment (PPE)

Appropriate PPE should be selected following a risk assessment of the procedure, the staff, the patient, as well as the current national alert level in order to best protect all concerned. A risk assessment should also be conducted for any accompanying carers.

Mask selection will be dependent on the risk assessment (see Table 2). It is currently recommended that all FFP2/FFP3 masks should be Fit tested to ensure maximal protection. Concerns have been raised about the availability of testing, the validity of the qualitative test and the decision of some countries to omit the need for testing. We would currently recommend testing and would emphasise the importance of checking on each occasion the mask is worn.

It is important to carry out a personalised risk assessment of all team members to ensure anyone that may be vulnerable to COVID-19 due to age, sex, ethnicity, pregnancy or co-morbidities has adequate protection. Counterfeit PPE has been reported and it is important to ensure that all equipment and materials used conform to BS, EN and ISO standards. It is recommended that all PPE is purchased through reputable suppliers to minimise the risk of counterfeit materials being used, leading to compromised safety.

FFP3 masks can provide some marginal benefit in terms of protection compared to an FFP2 mask. It may be worth considering the use of a higher-grade respirator (FFP3) if a risk assessment indicates that this would be worthwhile. Any benefit in protection may be offset by issues of operator comfort which can directly impact on compliance and safety. In most instances, an FFP2 mask would seem to provide adequate protection for high AGE risk. Whichever mask is worn, it must be appropriately Fit tested, and it should be stressed that mitigating measures, such as rubber dam usage, high volume suction and four handed dentistry are all key factors in reducing exposure to aerosol.

DHCWs who are unable to wear a FFP2/FFP3 mask either due to a failure of Fit testing or as a result of having a beard have the option of wearing a Powered Air Purifying Respirator (PAPR) hood. A PAPR hood functions at the level of an FFP3 mask but is reusable and does not require Fit testing. One of the limitations of the PAPR is that expired air is not filtered, like non-valved FFP2/FFP3 masks which allow filter exhaled air through the body of the mask. In contrast, valved masks allow the passage of unfiltered exhaled air through a port on the front of the mask. The use of a simple FRSM mask over a valved FFP2/FFP3, in addition to the visor, may offer additional protection following a risk assessment, but is not recommended as standard practice.

Table 2: Descriptor of key PPE usage in relation to alert levels and AGE risks *It is assumed that gloves will be worn for all procedures in the normal manner.*			
	ASPIRATIONAL	**BASIC**	**CONDITIONAL**
High alert level/high AGE risk	Not applicable	FFP2/FFP3/PAPR masks, visor, gown	FFP2/FFP3 mask/PAPR, visor, gown, hat plus shoe covers if deemed appropriate in view of risk to operator/nurse (see page 7)
High alert level/low AGE risk	Not applicable	FRSM, visor, apron	FFP2/FFP3 mask/PAPR, visor, gown, hat plus shoe covers if deemed appropriate in view of risk to operator/nurse (see page 7)
Low alert level/ high or low AGE risk	Not applicable	FRSM, appropriate eye protection	FFP2/FFP3/PAPR mask, visor, gown, hat plus shoe covers if deemed appropriate in view of risk to operator/nurse (see page 7)

Reusable masks with appropriate filters are available, however, it is important that doffing and disinfection of these masks is carried out following a strict protocol to prevent contamination.

Eye protection is an essential part of the barrier component of PPE. Evidence suggests that conjunctivae could be exposed to infective droplets during close contact. A full-face visor will reduce the amount of exposed skin on the face and neck that may be subject to splash or droplet contamination.

Evidence to support the use of **fluid repellent gowns** in preventing transmission of disease is inconclusive. However, for alert levels 3-5 and high AGE risk it is advisable to wear a long-sleeved fluid repellent gown. It is important that all team members are trained in the correct procedures for safe doffing of all PPE, including gowns. Reusable washable gowns may confer some benefits in terms of cost and environmental sustainability.

The use of full gowns in high risk situations will protect scrubs worn under the gown, therefore, it will not be necessary to change scrubs between sessions in one day. Scrubs should be changed daily and washed at a minimum of 60 degrees. In low risk situations, the policy of “bare below the elbow” can be used with diligent hand hygiene for disease prevention, including washing and drying the forearms and wrists.

It may be appropriate to wear head and shoe covers when indicated by a risk assessment. DHCWs who wear turbans, hijabs or other head covering may consider wearing protective covering in high risk situations. Wipeable indoor shoes covering the toes should be worn. The risk of spread or transfer of contaminants by shoes in a dental practice setting is low.

Procedural risk mitigation

High volume aspiration (HVA) has been shown to significantly reduce bio-aerosols and must be considered as a key mitigating measure in the reduction of aerosol spread. The use of four handed dentistry will also improve the efficiency and effectiveness of the dental team, which can also impact on the exposure risk in terms of aerosol spread and length of operative procedure.

A rubber dam should be used where AGE is a risk, and where it can be reasonably placed. Where it is not possible to place a rubber dam, high volume aspiration, ideally with an orifice diameter of at least 8mm, should be used. It is reported that this can reduce the quantity of bio-aerosol by 90-98%. Four-handed dentistry will improve efficiency and help limit the spread of the aerosol.

There is a lack of evidence of virucidal activity for use of pre-operative **mouthwash**. The evidence base for an effective protocol against COVID-19 is currently weak. SARS-CoV-2 is predominantly a respiratory virus; as the action of any mouthwash will be limited to the oral cavity, recolonisation is likely to ensue within a short space of time, thus negating the effects of the mouth rinse. If the use of pre-operative mouthwash is chosen it is important to obtain valid consent and be cautious of any potential adverse effects.

This narrative should be used in conjunction with the corresponding matrix to aid risk assessment and mitigation.

Matrix 3: During treatment		
Domain in the patient journey	**Potential risk status and likelihood**	**ABC based risk mitigation measures**
During treatment *Safety and PPE considerations*	*Describe the impact of the risk and score severity and likelihood* *(Negligible, minor, moderate, major, catastrophic)* *(Rare, unlikely, possible, likely, almost certain)*	***A** - Aspirational advice/best practice* ***B** - Basic minimum requirements* ***C** - Conditional advice based on the risk of high alert levels (1-5) and for those that may have a higher risk of COVID-19 related complications (see page 7)*
	Potential impact: In some DHCWs, inadequate PPE may increase the risk of more adverse outcomes from COVID-19 infection. This can result in significant illness or even death. Health care workers who are in high risk groups (see page 7) may also be at higher risk of adverse outcomes from COVID-19 and should perform a risk assessment in relation to their PPE practices. Likelihood of impact: Possible Severity: Catastrophic	**General mitigation** measures (ABC approach) The distinction between Aerosol Generating Procedures (AGP) and non-AGP does not address the exposure to natural droplets and aerosols arising from coughing, sneezing, talking and respiration. Other factors, such as the alert level, patient and staff considerations as well as the nature and length of the procedure will impact on the overall risk. We have taken an exposure-based approach to defining our risk as opposed to just looking at procedures that generate aerosol, as even talking to our patients will have a background potential exposure to aerosols and droplets through respiration. We therefore propose looking at aerosol generated exposure (AGE) as the basis of defining the risk. Some members of the team who are unable to wear FFP2/FFP3 mask may need to consider the use of a PARP hood which is discussed in more detail in the narrative. It is assumed that gloves will be worn as standard for every dental procedure.
Specific mitigating measures in the context of COVID-19 alert levels	COVID-19 alert level 4-5	**High alert level (3-5)/high AGE risk** **Basic** - FFP2/FFP3, visor, gown **Conditional** - FFP2/FFP3/PAPR, visor, gown, plus hat and shoe covers if deemed appropriate in view of risk to operator/nurse (see page 7) **High alert level (3-5)/low AGE risk** **Basic** – Fluid resistant surgical mask (FRSM), visor, apron *(if the risk assessment allows)* **Conditional** - FFP2/FFP3/PAPR mask, visor, gown, hat and shoe covers if deemed appropriate in view of risk to operator/nurse (see page 7)

	COVID-19 alert level 3	See alert level 4-5
	COVID-19 alert level 1-2	**<u>Low alert level (1-2)/high or low AGE risk</u>** **Basic** – FRSM, appropriate eye protection **Conditional** - FRSM, visor, apron if deemed appropriate in view of risk to operator/nurse (see page 7) All FFP2/FFP3/PAPR masks should be appropriately Fit tested and the DHCW should consider the use of power hood respirators and reusable FFP2/FFP3/PAPR where feasible to reduce the environmental impact of waste. DHCW should consider any religious/cultural considerations (beards/head wear) when choosing there PPE. Given the considerable impact of disposable PPE on the environment, reusable gowns should be sourced whenever possible and safe to do so. At present, there is inadequate evidence to support the efficacy of the use of prophylactic mouthwash for COVID-19 risk mitigation. We recommend that practitioners discuss the use of such products following a risk assessment in relation to potential adverse effects/benefits and obtain consent for its use.
<u>Conditional</u> mitigation measures for members of the dental profession who may be at higher risk of COVID-19 consequences	DHCWs who feel they may be high risk for having more adverse consequences of a COVID-19 infection should conduct a detailed risk assessment with their medical practitioner and evaluate their suitability for patient facing duties (see page 7).	

Domain in the patient journey	Potential risk status and likelihood	ABC based risk mitigation measures
During treatment *Adjunct to clinical procedures*	*Describe the impact of the risk and score severity and likelihood* *(Negligible, minor, moderate, major, catastrophic)* *(Rare, unlikely, possible, likely, almost certain)*	***A** - Aspirational advice/best practice* ***B** - Basic minimum requirements* ***C** - Conditional advice based on the risk of high alert levels (1-5) and for those that may have a higher risk of COVID-19 related complications (see page 7)*
	Potential impact: Some adjuncts are proposed as mitigation the transmission of COVID-19. Their efficacy remains unproven. Likelihood of impact: Unlikely Severity: Moderate	**General** mitigation measures (ABC approach) Where feasible, rubber dam should be employed in where AGE is a risk, and where it clinically appropriate and practical to do so: clearly there are areas where placement cannot be achieved; for example, but not limited to hygiene with ultrasonic scalers, oral and periodontal surgery where handpieces are employed and the preparation of teeth for indirect restorations with subgingival margins. In these instances, we recommend four handed dentistry with high volume aspiration to reduce bioaerosols. We recommend this adjunct particularly for alert levels 3-5. Operator team trained and efficient in four-handed dentistry to enhance the effectiveness of high-volume aspiration (HVA). Use of HVA with minimum 8mm orifice aspirator where AGE is a risk during alert levels 3-5. This statement includes treatments that risk AGE and are carried out by therapists and hygienists.
Specific mitigating measures in the context of COVID-19 alert levels	COVID-19 alert level 4-5	As above
	COVID-19 alert level 3	As above
	COVID-19 alert level 1-2	No additional measures necessary
Conditional mitigation measures for members of the dental profession who may be at higher risk of COVID-19 consequences	No additional measures necessary	

Section 4: After treatment

At the end of a treatment visit, the patient should leave the room immediately, then clean their hands directly outside the surgery using alcohol gel provided with laminated instructions for guidance.

After providing dental treatment for a patient, it is imperative that correct procedures and protocols are followed to protect staff and all subsequent patients. Dental procedures that involve high speed drilling, ultrasonic equipment, and air/water spray will produce an aerosol. There is currently no consensus on whether COVID-19 is spread via aerosols, but in view of the potential consequences of transmission, additional precautions need to be taken. The appropriate PPE has been covered in the Section 3.

Box 4: After treatment key points

- Standard decontamination procedures should be followed
- Routine cleaning where the risk of AGE is low
- High AGE risk requires appropriate doffing of gown, with mask retained and removed outside the surgery
- A fallow time of 60 minutes is currently recommended, timed from cessation of the dental AGE
- Mitigating measures may be implanted to reduce this figure
- Floor cleaning should be undertaken at the end of each high-risk AGE or the end of each session
- No paper records should be retained in the surgery while the risk of AGE is high or during the fallow period
- Scrubs should be changed daily and washed at the highest possible temperature

Following treatment where an aerosol has been generated, the clinical team should doff their PPE in the surgery, except their masks (which can be removed in a designated doffing area), strictly adhering to the doffing guidance published by Public Health England (PHE). All clinical staff should be meticulously trained in donning and doffing techniques, including washing the forearms during hand hygiene.

Fallow period after high AGE risk in a dental surgery

Clearance of infectious particles after risk of AGE in dentistry is usually considered to be dependent on the ventilation and air change within the room. However, other factors, such as the type of procedure carried out, the use of HVA, the use of rubber dam, the duration of aerosol generation and the size and shape of the room also have to be taken into account when deciding how long it would take for clearance of infectious viral particles after a particular procedure. A Risk Stratification Matrix has been developed to assist practitioners in assessing the risks posed by AGE (see Section 3).

At the time of writing, there is a lack of evidence to give an accurate time required for clearance of infectious aerosols after a particular procedure (fallow period), before decontamination of the surgery can begin. This is partly because of the variables

stated above, but also because our knowledge of the infectivity of aerosols generated through carrying out dental treatment on COVID-19 individuals is still evolving.

Current guidance from PHE based on advice from the New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG), recommends a fallow period of 60 minutes in a single room with 6 air changes per hour (ACH) following AGPs (high AGE risk).

Given that our knowledge of dental aerosols is still evolving, and that there is a potential risk of transmission of COVID-19 through aerosols, we currently accept that 60 minutes should be the recommended fallow period needed after a high AGE risk. This should be timed from the cessation of aerosol generation. This recommendation would be applicable for a surgery in which 6 ACH can be assured, whether by means of an open window and/or additional mechanical methods. A practitioner can choose to adjust this time if, after carrying out a thorough risk assessment, it is considered that the risk of AGE can be modified. It would be expected that any such risk assessment which leads to an adjustment in the fallow period from 60 minutes is clearly documented and can be evidenced if requested later.

Examples of justifiable mitigation would be:

- Type of procedure carried out – whether a high or low AGE risk
- Use of rubber dam
- Use of HVA
- Duration of the aerosol generation
- Dimensions of the room
- Methods of ventilation

Opening windows or the use of a single room air conditioning unit, or air conditioning system that has recirculation turned off (extraction only mode) will improve ventilation. Air purifiers/air cleaners containing a HEPA filter and/or other adjuncts have been suggested as supplementary measures. There is currently not enough evidence to say whether the use of these measures will result in reducing the clearance time of potentially infective aerosols, but this view may change as further evidence emerges. Treatments involving a risk of AGE should be avoided in windowless rooms and those with windows that cannot be opened, unless they have additional mechanical extraction ventilation. As our knowledge of COVID-19 and its transmission through dental AGE increases, the duration of the fallow period is likely to be reviewed. In practical terms, consideration should be given to high AGE risk at the end of a session, particularly during the early stages of the return to work, when national alert levels may still be high.

It is widely considered that many dental procedures create a negligible level of aerosol, and should be considered a low AGE risk. In these circumstances, the operating area can be decontaminated without implementation of a fallow period.

It is recommended that team members wear fluid-resistant surgical masks, eye protection and plastic aprons during decontamination of the surgery. Surfaces should be cleaned using a detergent and then disinfected using a virucidal agent.

The floor should be cleaned thoroughly with a mop, and ideally this should be done after every treatment involving a high risk of AGE. We recommend the use of reusable or washable mop heads where possible, to reduce both the financial and environmental costs. Risk of contamination can be mitigated by using a suitable virucidal solution to clean the mop or consider a detachable mop head or cleaner which can be washed and reused. We do not advocate the use of single use mops in view of the environmental impact, and would recommend a more pragmatic and cost-effective, risk-based approach. If no high-risk procedures have been undertaken, floor cleaning should be done at the end of each day.

Team members should be trained in appropriate environmental cleaning methods, and this is facilitated by decluttering all work surfaces and removing wall art. Reusable instruments should be decontaminated in accordance with national guidelines.

Digital clinical records may be completed in the surgery while wearing PPE, or in a clean area following doffing of PPE and hand hygiene. If not washable, the keyboard and mouse should be covered with single-use cling film. SARS-CoV-2 remains viable for 24 hours on cardboard. Copies of radiographs should be placed in a clear plastic sleeve that can be disinfected or disposed of as infectious waste. Paper records should be completed in a clean area following doffing of PPE and hand hygiene.

Scrubs should not be worn outside the practice. They should be taken home for washing after a day’s wear in a sealed plastic bag, pillowcase or dissolvable single-use bag. They should be washed separately from other clothing at the highest possible temperature in a half-full load and then tumble dried or ironed.

Matrix 4: After treatment		
Domain in the patient journey	**Potential risk status and likelihood**	**ABC based risk mitigation measures**
After treatment *Decontamination and disinfection*	*Describe the impact of the risk and score severity and likelihood* *(Negligible, minor, moderate, major, catastrophic)* *(Rare, unlikely, possible, likely, almost certain)*	***A** - Aspirational advice/best practice* ***B** - Basic minimum requirements* ***C** - Conditional advice based on the risk of high alert levels (1-5) and for those that may have a higher risk of COVID-19 related complications (see page 7)*
	Potential impact: Potential transmission of COVID-19 within the practice. Compliance with statutory bodies. Poor compliance with decontamination and disinfection would have a detrimental impact on public confidence. Likelihood of impact: Possible Severity: Catastrophic	**General** mitigation measures (ABC approach) We propose there is no change from national guidelines (HTM01-05) in the disinfection processes. All staff members involved in decontamination and disinfection, including cleaning staff, must be provided with and wear the appropriate PPE in consideration of a personalised risk assessment. They should also receive any specific safety training required. **Conditional**: For COVID-19 alert levels 3-5, the current PHE guidance for the fallow period following an Aerosol Generating Procedure created by a dental procedure is 60 minutes (NERVTAG). However, due to patient needs, following a risk assessment it may be appropriate in some circumstances to review the fallow period from the cessation of the procedure. Environmental factors, such as air exchange/ventilation, maybe taken into account. This specific area is under review and the guidance will be updated when further evidence becomes available. This should be followed by a thorough clean of all exposed surfaces. We also propose opening any accessible windows during this period to allow the circulation of air. Consideration should be given to a cleaning checklist. In rooms with sub-optimal natural ventilation, consideration can be given to the use of adjuncts, such as air exchangers following a thorough risk assessment. However, evidence for their use is still evolving.

		For alert levels 3-5 where high AGE risk activity has been performed, safe practice of donning (putting on PPE) and doffing (the removal of potentially contaminated PPE) is critical. This involves the secure application of Fit tested FFP2/FFP3 masks or a PAPR which does not require Fit testing as well as the use of full-sleeved gowns. It may be helpful to adopt a "buddy" system where a colleague will assess the application of the mask and gown efficacy. Donning should be carried out in a clean area. Doffing should be performed cautiously in the designated area where there is access to hand washing facilities and clinical waste disposal. We recommend a formal record of Fit testing and PPE etiquette training be kept ensuring compliance.
Specific mitigating measures in the context of COVID-19 alert levels	COVID-19 alert level 4-5	See above
	COVID-19 alert level 3	See above
	COVID-19 alert level 1-2	Conduct a risk assessment and undertake appropriate action.
Conditional mitigation measures for members of the dental profession who may be at higher risk of COVID-19 consequences	All staff members should undertake a personalised risk assessment to ascertain their personal safety in relation to the use of PPE.	

Section 5: Management tasks

The efficient management of the practice is important to ensure safety to staff, patients and other visitors. It is vital that protocol and measures are reviewed and adjusted in line with the risk assessment and alert level.

It is suggested that a lead should be appointed to provide oversight, and that someone should also be responsible for wellbeing within the practice.

Physical barriers, such as reception screens, will provide safety and reassurance for staff and patients. Where this is not possible, masks and visors would be appropriate, along with appropriate social distancing.

Box 5: Management tasks key points

- Protocols reviewed regularly to reflect the level of risk
- Identify members of staff to fulfil specific duties:
  - Management/governance lead
  - Health and wellbeing lead
- Facilities prepared to support social distancing with appropriate signage/ demarcation
- Risk assessment of staff prior to recommencement of work
- Access and occupational health support available for staff
- Appropriate training in place, including medical emergencies
- Stock control reviewed and ensure appropriate PPE available

Alcohol hand gel should be placed at the entry and exit points. Where possible, a flow through the work area should be implemented with clear separation of the clinical and non-clinical workspaces.

There will be a need for a review of staff training, particularly in relation to medical emergencies in line with the Resuscitation Council (UK) guidance as there are some subtle but important changes. Simulation exercises may be a useful tool in this respect; this would also give practices the opportunity to ensure the correct functioning of equipment.

A thorough medical history will be important and where possible should be completed prior to patient attendance and checked on arrival. There are cases where the patient's medical condition will necessitate a risk assessment prior to treatment during which the balance of treatment versus patient risk should be assessed. Likewise, staff working in the environment should undergo a thorough risk assessment via a robust occupational health policy prior to recommencing their duties. This should involve a survey of any factors that may result in a higher risk of an adverse outcome from COVID-19. DHCWs who are found to be high risk following their assessment should seek appropriate advice from either occupational health or their own medical practitioner for the most appropriate and safe course of action.

Staff should also be mindful of the increased prevalence of safeguarding issues relating to children, vulnerable patients and the elderly. Patients may also present with increased psychological health problems due to issues around COVID-19 related anxiety.

There should be an open culture within the practice to encourage staff to report if they feel unwell. Access to occupational health and mental health wellbeing is important and practices should be able to signpost to these services, while being cognisant that availability of such services may also be under considerable pressure during and after the pandemic. The impact of COVID-19 on the health and well-being of dental personnel could be considerable with the additional pressures of “new ways of working”; increased responsibility, anxieties around transmission, job insecurity and financial pressures. Increased stress and pressure at work will almost be inevitable as we return to practice, and it is important to acknowledge that this may be felt unequally. Some staff may feel vulnerable, and all DHCW need to be mindful of discrimination and bullying. Practice policies may need to be revisited to ensure adequate support is in place.

Risk assessments should be used to produce protocols for safe practice in both clinical and non-clinical areas. Clinical and non-clinical waste should be securely sealed and stored appropriately, and the practice should develop protocols to deal with external visitors such as waste carriers, deliveries or engineers, so that everyone is adequately protected in accordance with the alert level. Locum staff should be screened prior to attendance and should be made aware of local protocols.

It is accepted that these have been difficult times financially for all businesses and that there may be pressure on practice accounts resulting in supply issues. It is important that sufficient PPE is available. It needs to be of the appropriate type and compliant with the required safety standard. Following a long period of closure, it is important that equipment is checked prior to the practice resuming appropriate services and the expiry date of all materials and emergency drugs are checked and recorded. A method of stock control to maintain supply of vital materials and equipment should be reinforced.

It is possible that some dental professionals may have reduced their indemnity cover following lockdown and it is important that they review this to ensure it is appropriate for their level of activity and scope of practice.

Adaptation to new working conditions and refreshment of working practices will be needed following a long period of closure to regain confidence and maintain safety. Staff should undergo regular and practical training on relevant CPD topics so that they retain the appropriate skill mix. This can be delivered via digital media to mitigate the impact on face to face training. It is recommended that staff should keep their CPD and PDP portfolios up to date and record any training they may have undertaken.

It is for individual practices to ensure a risk assessment is carried out and the appropriate levels of mitigation are in place to reduce any areas of potential concern. This narrative should be used in conjunction with the remainder of this document as an aid to mitigation of risk.

Matrix 5: Management tasks		
Domain in the patient journey	**Potential risk status and likelihood**	**ABC based risk mitigation measures**
Management *Medical emergencies*	*Describe the impact of the risk and score severity and likelihood* *(Negligible, minor, moderate, major, catastrophic)* *(Rare, unlikely, possible, likely, almost certain)*	***A** - Aspirational advice/best practice* ***B** - Basic minimum requirements* ***C** - Conditional advice based on the risk of high alert levels (1-5) and for those that may have a higher risk of COVID-19 related complications (see page 7)*
	Potential impact: This can have a significant impact on patient safety as well as staff safety if the response is not conducted in a safe manner with appropriate PPE Likelihood of impact: Unlikely Severity: Catastrophic	**General mitigation** measures (ABC approach) **Basic** - All patients should have their medical history checked on arrival in case of any changes since the last visit. In the event that a patient is currently shielding (subject to government guidance), the clinician should conduct their own risk assessment and assess the risk versus benefit of delaying treatment (e.g. a diabetic with a dental abscess may get worse if untreated). A medical emergency is an unlikely event in the dental surgery, but the dental team needs to be prepared for such an eventuality. For most emergencies, the management will be no different from the pre-COVID time except for situations that involve the airway and breathing (cardiac arrest, asthma and choking) which will generate a significant risk of AGE. In the event of a cardiac arrest, the current Resuscitation Council (UK) guidance is as follows. • 'Recognise cardiac arrest by looking for the absence of signs of life and the absence of normal breathing. Do not listen or feel for breathing by placing your ear and cheek close to the patient's mouth. If you are in any doubt about confirming cardiac arrest, the default position is to start chest compressions until help arrives. • Make sure an ambulance is on its way. If COVID 19 is suspected, tell them when you call 999. • If there is a perceived risk of infection, rescuers should place a cloth/towel over the victim's mouth and nose and attempt compression only CPR and early defibrillation until the ambulance (or advanced care team) arrives. Put

		hands together in the middle of the chest and push hard and fast. • Early use of a defibrillator significantly increases the person's chances of survival and does not increase risk of infection. • If the rescuer has access to any form of personal protective equipment (PPE) this should be worn. • After performing compression-only CPR, all rescuers should wash their hands thoroughly with soap and water; alcohol-based hand gel is a convenient alternative. They should also seek advice from the NHS 111 coronavirus advice service or medical adviser.'
Specific mitigating measures in the context of COVID-19 alert levels	COVID-19 alert level 4-5	As above
	COVID-19 alert level 3	As above
	COVID-19 alert level 1-2	As above
Conditional mitigation measures for DHCW who may be at higher risk of COVID-19 consequences	All staff should be mindful of their personal safety when responding to emergencies and should ensure they wear the appropriate PPE.	

Domain in the patient journey	Potential risk status and likelihood	ABC based risk mitigation measures
Management *Occupational health*	*Describe the impact of the risk and score severity and likelihood* *(Negligible, minor, moderate, major, catastrophic)* *(Rare, unlikely, possible, likely, almost certain)*	***A** - Aspirational advice/best practice* ***B** - Basic minimum requirements* ***C** - Conditional advice based on the risk of high alert levels (1-5) and for those that may have a higher risk of COVID-19 related complications (see page 7)*
	Potential impact: Poor staff health can compromise patient safety, staff safety and loss of workforce and potentially reputational risk. Likelihood of impact: Possible Severity: Major	**General mitigation** measures (ABC approach) **Aspirational** - Local access to occupational health and mental health support to consider the development of a practice wellbeing lead to support staff. **Basic** - All staff should undergo a risk assessment prior to recommencing their duties. This should involve review of any high-risk factors that may result in an adverse outcome from COVID-19 (see page 7). This should be a prerequisite and conducted with the support of the medical practitioners where indicated. At the advice of their Occupational Health/Medical Practitioner, DHCWs may consider modifying their roles. The practice should develop clear guidance on staff who become unwell and how they report their sickness. They should not attend work and should follow the current government guidance on self-isolation. They should also socially isolate at home and contact medical services (NHS111) if they suspect they have a COVID-19 related illness. Staff and patients who may have been in contact with the member of staff may also need to be traced and contacted. Staff who are self-isolating should have regular welfare checks to ensure their safety and wellbeing. Practices should be aware of their local COVID-19 testing sites. The occupational health policy should form a part of the overall governance strategy that deals with the obligations of the organisation. An occupational health risk assessment should be conducted as deemed appropriate in accordance with staff needs. All new and temporary staff should also undergo an occupational risk assessment before commencing work.

Specific mitigating measures in the context of COVID-19 alert levels	COVID-19 alert level 4-5	None
	COVID-19 alert level 3	None
	COVID-19 alert level 1-2	None
Conditional mitigation measures for DHCW who may be at higher risk of COVID-19 consequences	Staff who have been identified as being vulnerable of having a more adverse effect of COVID-19 should be supported to work safely following the recommendations of a medical practitioner or qualified independent occupational health advisor.	

Domain in the patient journey	Potential risk status and likelihood	ABC based risk mitigation measures
Management *Finance*	*Describe the impact of the risk and score severity and likelihood* *(Negligible, minor, moderate, major, catastrophic)* *(Rare, unlikely, possible, likely, almost certain)*	***A** - Aspirational advice/best practice* ***B** - Basic minimum requirements* ***C** - Conditional advice based on the risk of high alert levels (1-5) and for those that may have a higher risk of COVID-19 related complications (see page 7)*
	Potential impact: Possible closures and loss of service. Severe impact to patient access. Reputational loss, wider impacts on dependents, psychological stress from financial uncertainty Likelihood of impact: Almost certain Severity: Major	**General mitigation** measures (ABC approach) This risk comprises a number of key challenges that are difficult to mitigate against in the current situation. This may include the risks around the practice having the capacity to meet its business costs. Mitigating measures such as support from the central government (loans and limited financial support). Short term flexibility in loan repayments is available. It may also help to have open discussions with staff around working patterns and their contracts. Political and public support may also be helpful in expediting measures to urgently address this issue.
Specific mitigating measures in the context of COVID-19 alert levels	COVID-19 alert level 4-5	As above
	COVID-19 alert level 3	As above
	COVID-19 alert level 1-2	As above
Conditional mitigation measures for DHCW who may be at higher risk of COVID-19 consequences	N/A	

Domain in the patient journey	Potential risk status and likelihood	ABC based risk mitigation measures
Management *Facilities* *IT* *Payment* *Staff areas*	*Describe the impact of the risk and score severity and likelihood* *(Negligible, minor, moderate, major, catastrophic)* *(Rare, unlikely, possible, likely, almost certain)*	***A** - Aspirational advice/best practice* ***B** - Basic minimum requirements* ***C** - Conditional advice based on the risk of high alert levels (1-5) and for those that may have a higher risk of COVID-19 related complications (see page 7)*
Toilets *Imaging* *Clinical and non-clinical waste* *Decon area* *Storage areas* *Reception* *Waiting* *Shared space* *Furniture* *Decluttering areas*	Potential impact: Facilities may become contaminated with COVID-19 and this may propagate the infection risk between clinical and non-clinical areas. Likelihood: Possible Severity: Minor	**General mitigation** measures (ABC approach) **Basic** - There should be clear guidance and a practice policy around the management of facilities, especially staff areas such as the staff room to reduce the risk of cross infection. This would involve the strict no PPE in the non-clinical areas, rigorous hand hygiene and regular cleaning of all areas. Appropriate signage to identify non-PPE areas. It is the responsibility of all staff members to ensure that all areas are kept clean and tidy at all times and free of waste. Clinical and non-clinical waste should be sealed and disposed of in the appropriate colour coded bags. IT elements, such as computer keyboards, mice and telephones are potential for fomite spread and should be cleaned after each use and be wiped down and sanitised for other users. Toilets should be cleaned regularly. The practice should also review their policies on practice furniture, soft furnishing and other items, such as magazines and toys, in order to reduce the risk of cross contamination when the alert levels are 3-5.
<u>Specific</u> mitigating measures in the context of COVID-19 alert levels	COVID-19 alert level 4-5	Thorough approach to mitigating cross contamination risks between clinical and non-clinical areas
	COVID-19 alert level 3	Thorough approach to mitigating cross contamination risks between clinical and non-clinical areas
	COVID-19 alert level 1-2	We feel that this should be adopted as best practice even with a low COVID-19 infection risk

<u>Conditional</u> mitigation measures for DHCW who may be at higher risk of COVID-19 consequences	N/A

Domain in the patient journey	**Potential risk status and likelihood**	**ABC based risk mitigation measures**
Management *Patient safety*	*Describe the impact of the risk and score severity and likelihood* *(Negligible, minor, moderate, major, catastrophic)* *(Rare, unlikely, possible, likely, almost certain)*	***A** - Aspirational advice/best practice* ***B** - Basic minimum requirements* ***C** - Conditional advice based on the risk of high alert levels (1-5) and for those that may have a higher risk of COVID-19 related complications (see page 7)*
	Potential impact: Patient safety has been the key priority of health care. There is also a significant reputational risk for the practice as well as medicolegal concerns and may raise issues around fitness to practice. Likelihood: Possible Severity: Catastrophic	**General mitigation** measures (ABC approach) Safety measures (such as staff wearing surgical masks) should be employed at all levels of the patient journey to ensure that the risk of harm is minimised. High-quality care should be provided, embracing the highest level of protection and universal prevention measures in relation to COVID-19 infection. Patients and other visitors should wear simple face coverings, in line with the latest government advice. Staff should also be mindful of the increased prevalence of safeguarding issues relating to children, vulnerable patients and the elderly. Patients may also present with increased psychological health problems due to issues around COVID-19 related anxiety.
<u>Specific</u> mitigating measures in the context of COVID-19 alert levels	COVID-19 alert level 4-5	Risks related to patient safety should be correlated with a number of factors, such as patient factors, the environment and the COVID-19 alert level.
	COVID-19 alert level 3	Risks related to patient safety should be correlated with a number of factors, such as patient factors, the environment and the COVID-19 alert level.
	COVID-19 alert level 1-2	Risks related to patient safety should be correlated with a number of factors, such as patient factors, the environment and the COVID-19 alert level.
<u>Conditional</u> mitigation measures for DHCW who may be at higher risk of COVID-19 consequences	All patients and protocols should be risk assessed and reviewed to reflect new knowledge and guidance in order to mitigate the risks of human or systems error.	

Domain in the patient journey	**Potential risk status and likelihood**	**ABC based risk mitigation measures**
Management *Staff Safety* *Psychological health* *Risk of COVID-19 (patients/other staff/external visitors)* *Equipment failure related harm* *Unfamiliarity with the work environment temporary staff*	*Describe the impact of the risk and score severity and likelihood* *(Negligible, minor, moderate, major, catastrophic)* *(Rare, unlikely, possible, likely, almost certain)*	***A** - Aspirational advice/best practice* ***B** - Basic minimum requirements* ***C** - Conditional advice based on the risk of high alert levels (1-5) and for those that may have a higher risk of COVID-19 related complications (see page 7)*
	Likelihood: possible Severity: catastrophic Impact: The COVID-19 crisis is likely to put significant stresses on staff wellbeing in terms of psychological health, physical health (risk of COVID-19 infection) and financial security.	**General** mitigation measures (ABC approach) It is important for staff wellbeing and overall morale of the practice that staff are supported to conduct their work safely. This will involve the provision of appropriate PPE as well the training on how to use it safely. Local protocols should be written to help develop pathways where they may have to interact with external visitors (delivery drivers or engineers). Staff should have refresher training on using equipment preceding the return to work. This may be especially applicable to locum/temporary staff who may be unfamiliar with the practice and should have an induction to familiarise themselves with the COVID-19 specific policies. There is also a potential risk of bullying and harassment of staff in the workplace in relation to COVID-19. Practices should review their work policies to mitigate this. The practice should also have a zero-tolerance policy towards abuse from patients.
Specific mitigating measures in the context of COVID-19 alert levels	COVID-19 alert level 4-5	Risks related to patient safety should be correlated with a number of factors, such as patient factors, the environment and the COVID-19 alert level.
	COVID-19 alert level 3	Risks related to patient safety should be correlated with a number of factors, such as patient factors, the environment and the COVID-19 alert level.
	COVID-19 alert level 1-2	Risks related to patient safety should be correlated with a number of factors, such as patient factors, the environment and the COVID-19 alert level.

Conditional mitigation measures for DHCW who may be at higher risk of COVID-19 consequences	All staff members should undergo a risk assessment to identify any areas that may affect their ability to work with patients via a robust occupational health policy. Staff members may also need access to confidential counselling for psychological support if required.

Domain in the patient journey	**Potential risk status and likelihood**	**ABC based risk mitigation measures**
Management *Staff training* *Safe working* *PPE etiquette* *Medical emergencies* *IT constraints* *Telephone/video triage* *Safeguarding*	*Describe the impact of the risk and score severity and likelihood* *(Negligible, minor, moderate, major, catastrophic)* *(Rare, unlikely, possible, likely, almost certain)* Likelihood: Likely Severity: Major Impact: Patient safety and staff welfare relies heavily on staff being well trained in clinical as well as non-clinical areas.	***A** - Aspirational advice/best practice* ***B** - Basic minimum requirements* ***C** - Conditional advice based on the risk of high alert levels (1-5) and for those that may have a higher risk of COVID-19 related complications (see page 7)* **General mitigation** measures (ABC approach) Staff should undergo regular and practical training on relevant CPD topics so that they retain the appropriate level of training. This can be delivered via digital media to mitigate the impact on face to face training. All staff should keep their CPD and PDP portfolios up to date.
Specific mitigating measures in the context of COVID-19 alert levels	COVID-19 alert level 4-5	There may be a reduced opportunity for face to face training
	COVID-19 alert level 3	There may be a reduced opportunity for face to face training
	COVID-19 alert level 1-2	Face to face training should be phased back in when it is deemed safe to do so
Conditional mitigation measures for DHCW who may be at higher risk of COVID-19 consequences	Staff should be supported in their training needs, especially when this relates to change in practice and COVID-19 specific knowledge and training in areas, such as PPE use (donning and doffing), Fit testing, medical emergencies, disinfection and dental triage.	

Protecting vulnerable dental health care workers

The impact of COVID-19 on vulnerable groups

Most people (>80%) who get a COVID-19 infection will have mild or, as is increasingly understood, almost no symptoms at all and some studies have suggested that up to 60% of people may have asymptomatic COVID-19. This means that it will be almost impossible to identify many of the patients who attend the surgery and are potentially infective. This is why we need to take the appropriate precautions so that we can protect our patients, other members of the dental team and ourselves from COVID-19 infections.

There have been discussions of and media attention on the impact of COVID-19 on high risk groups. It is crucial to note that they are not at high risk of *spreading* COVID-19 but are at a higher risk of becoming *more ill* if they develop COVID-19 and require an ITU admission. Centre for Evidence-Based Medicine (CEBM) found that excess hospital deaths due to COVID-19 were 1.5 times higher than expected for Indians living in the UK, 2.8 times for the Pakistani population and 3 times higher for the Bangladeshi population. With respect to black communities, the figures were even higher with the black African population having 4.3 times higher hospital deaths than expected. For the black Caribbean group, it was 2 times higher and for other BAME groups it was 1.6 times higher. The data was also backed up with the Office of National Statistics (ONS) which showed a similar pattern. Furthermore, the analysis of 119 deaths of health care workers showed the majority were from Black, Asian and Minority Ethnic (BAME) communities.

Although the reasons for this are not clear, it is thought it could be due to increased prevalence of conditions such as heart disease, diabetes, obesity in these communities. Given that nearly half of the UK dental workforce is from BAME communities we feel it is essential that BAME workers take the appropriate steps to mitigate this risk. It is not just members of the BAME community; those who have other illnesses are also at risk. Often the risk may be so high that these workers and patients have been asked to shield themselves as the risk of an adverse form of COVID-19 is just too great. It does not mean that these groups are high risk of transmitting COVID-19, but that they are more susceptible to adverse outcomes following a COVID-19 infection.

At the start of the pandemic in early March 2020, NHS England released a list of those who are vulnerable to COVID-19 and as our knowledge of COVID-19 increases this list is likely to change.

If DHCWs are identified as vulnerable, it is recommended that advice is sought from a qualified occupational health expert or general medical practitioner. PHE guidance for secondary care recommends that vulnerable individuals should be redeployed or

isolate at home. This approach may present challenges in general dental practice, specifically for those who are self-employed. A risk assessment in conjunction with appropriate occupational health advice may identify specific mitigation measures which could be adopted, including avoidance of certain procedures or the use of enhanced PPE.

People at high risk (clinically extremely vulnerable)

People at high risk from coronavirus include people who:

- Have had an organ transplant
- Are having chemotherapy or antibody treatment for cancer, including immunotherapy
- Are having an intense course of radiotherapy (radical radiotherapy) for lung cancer
- Are having targeted cancer treatments that can affect the immune system (such as protein kinase inhibitors or PARP inhibitors)
- Have blood or bone marrow cancer (such as leukaemia, lymphoma or myeloma)
- Have had a bone marrow or stem cell transplant in the past 6 months, or are still taking immunosuppressant medicine
- Have been told by a doctor they have a severe lung condition (such as cystic fibrosis, severe asthma or severe COPD)
- Have a condition that means they have a very high risk of getting infections (such as SCID or sickle cell)
- Are taking medicine that makes them much more likely to get infections (such as high doses of steroids or immunosuppressant medicine)
- Have a serious heart condition and are pregnant

People at moderate risk (clinically vulnerable)

- Are 70 or older
- Are pregnant
- Have a lung condition that's not severe (such as asthma, COPD, emphysema or bronchitis)
- Have heart disease (such as heart failure)
- Have diabetes
- have chronic kidney disease
- Have liver disease (such as hepatitis)

- Have a condition affecting the brain or nerves (such as Parkinson's disease, motor neurone disease, multiple sclerosis or cerebral palsy)
- Have a condition that means they have a high risk of getting infections
- Are taking medicine that can affect the immune system (such as low doses of steroids)
- Are very obese (a BMI of 40 or above)

Patients with head and neck cancer/post radiotherapy/chemotherapy may also be more vulnerable although they were not officially included in the patient list.

Every day we are learning more about the risks associated with COVID-19 and it is likely that this list will change over time. We are also learning more about testing for COVID-19 (antigen swabs which detect the virus using techniques such as Polymerase Chain Reaction [PCR] and also antibody tests which detect antibodies to the virus). Although the accuracy of the tests is improving (but not yet enough to use in the dental setting) it is only a matter of time before a reliable test which can be used to screen for COVID-19 is available. In the meanwhile, it is essential that members of the profession remain vigilant to the risks of COVID-19 and use a risk-based approach to mitigate any risk for their patients, other members of the dental team or themselves.

Frequently asked questions

1. What is a risk matrix?

A risk matrix provides a structured approach to thinking about risk. It helps identify risks, consider their impacts, their likelihood and what can be done to reduce them. Risks cannot be eliminated, and certainly not with COVID-19; but a risk matrix can help to reduce them substantially. We learn from experience and mistakes, which we can draw on to identify potential triggers of danger for the future. Our matrix gives structure to that analysis.

Everyone faces different circumstances and will have a different approach to mitigating the risks they identify, so the matrix should be personalised to the dental practice and to the individual.

2. Why do we need a risk matrix?

We lack evidence about the threat of COVID-19, but we do know that it affects people differently, and we know that the nature of the threat is evolving as the pandemic progresses. We need to be ready to adapt as the threat evolves.

We think that using a risk matrix will be more useful and more sustainable as the effect of the disease on society changes. Our guidance must be flexible if it is to be relevant as the official alert level changes. It should take account of people's evolving circumstances. Our knowledge of the disease will improve, and the guidance should aim to accommodate future improvements in understanding of its implications for DHCWs and patients.

3. How do I use the matrix?

The matrix has been devised to follow the patient journey:

- Pre-appointment - before arrival
- Patient attendance (pre-treatment)
- During treatment
- After treatment
- General management

The approach is designed to help the reader to identify areas in the work environment and their daily routine that may need to be considered. The patient journey is addressed in more detail within each domain. The explanatory text relating to each domain will help you to construct your risk matrix and conduct the assessment effectively.

Risk status and impact

We have assigned particular risks with a broad risk status indicator, reflecting severity and likelihood. We have made this judgement in relation to a generalised risk for the whole profession in the UK. Our risk indicator may not reflect the risk for everyone: hence, again the emphasis on a personal risk assessment.

- Severity is ranked as 'negligible', 'minor', 'moderate', 'major' or 'catastrophic'.

- Likelihood is ranked as 'rare', 'unlikely', 'possible', 'likely' or 'almost certain'.

'Impact' describes the nature of adverse effect on the relevant part of the patient journey. It provides the impetus to revise practice policies, or specific mitigation measures. It is difficult to cover every eventuality, but the exercise is helpful in giving priority to those consequences that are best avoided.

Mitigation measures

Risk cannot be eliminated entirely but we can attempt to mitigate it, drawing on what we have previously discovered ('best evidence') and what appears to be safe and pragmatic. Practices will differ in their capacity to accommodate some measures we have identified, so we have adopted an "ABC" approach, in common with other FGDP(UK) guidance and standards:

A. Aspirational advice: 'best practice'
B. Basic, or minimum requirements
C. Conditional advice: depending upon the personal level of risk and national alert designation at the time.

We have suggested further information for each of the mitigation measures which members of the Task Group have identified as useful. This information is not necessarily endorsed by the group's sponsoring bodies.

4. Other countries have already produced guidance; why can't we use theirs?

We can certainly learn from the experience of others, but every country has faced its own particular challenges and responded in ways that have seemed appropriate for them.

In particular, the guidance produced by other countries reflects the disease exposure they have faced, and their own model of health care delivery. Australia, New Zealand and Canada, for instance, have implemented measures appropriate to the lower level of threat that they have faced. The UK has experienced one of the highest levels of

disease in the world. Their health care systems operate in very different ways, and certainly different to the UK.

5. What is a personalised risk assessment?

In an emergency, governments introduce general measures that take no account of the different circumstances around the country, as was done with COVID-19; from suddenly restricting dentistry to only few emergency procedures in highly-controlled centres at the moment of crisis, services will be gradually permitted nationwide. But not all parts of the country are exposed to the same risk, and both governments and regulators will expect practitioners to make their own competent assessment of the threat to their patients, their practice and their colleagues. DHCWs are very experienced in undertaking risk assessments; there will be added emphasis on doing so in such challenging circumstances. Regulators will expect a particular emphasis on safety to retain public confidence in dentistry over the months and years ahead.

A personalised risk assessment should consider the personal circumstances of team members: their age, sex, ethnicity, and co-morbidities are all relevant. Pregnancy is a consideration.

Other important considerations include geographical location, the characteristics of the patient population, the sub specialisms of the practice, surgery design, the equipment available and to be used, access to the practice and access to digital dentistry.

This is not an exhaustive list. Engagement with all members of the team will help to identify the particular risks to which your practice, and every individual within it, is exposed.

6. How can I put all this together?

This is a stressful and confusing time for all members of the team, and many want simply to get back to work to provide the treatment our patients want and need. A personalised risk assessment will help you to take control and to reassert the autonomy and responsibility that has been taken away in a crisis. Identifying the risks, to the practice and to individuals, is a first step to dealing with them. By working together as a team, all can proceed with confidence and help to sustain trust in dentistry overall.

7. There is so much guidance out there already; I am confused – which should I use?

The wealth of advice and guidance that is readily available places additional responsibility on individual practitioners in making the right choices. However, there

appears to be general congruence in the guidance that is available, albeit often with application to specific circumstances and settings.

It is our intention that our guidance will provide you with the tools to make your own assessment of risk and appropriate decisions tailored to your own circumstances. We do so as independent membership organisations, committed to the interests of patients, setting standards and cultivating professionalism in dentistry.

It is beyond the scope of this guidance to comment on the advice of others; but it is important to appreciate that what works well in one set of circumstances – one country's health care system, for instance – may not be so applicable in others.

8. What are the COVID-19 alert levels?

We expect the government assigned "alert" designation to fluctuate between 4 and 2 (on the 5-point scale) over the coming months, but it is unpredictable. Given the perceived intrinsic risks associated with dentistry, practices may have to remain shut if governments are not confident that they can manage the risks associated with opening; and when open, a strictly phased approach to the introduction of procedures may be considered necessary. The approach we have set out in this guidance is designed to help practices through the rest of the pandemic; to build public confidence in our ability to manage the risks effectively, to adapt to the evolving alert designation, and to protect patients and staff.

Table 3: UK COVID-19 alert levels

5	Critical	A strict lockdown is required; the virus is spreading fast and could overwhelm the NHS
4	Severe	Care services are stretched but are coping
3	Substantial	The virus is in general circulation and the NHS is operating at extra capacity. Some restrictions will need to remain in place, but it will be safe to relax some measures
2	Moderate	There is a low level of virus transmission and the NHS is operating normally. Schools and businesses should be able to open, subject to social distancing measures
1	Safe	The virus is no longer present in the UK. No behavioural restrictions will be needed, and public and private sectors will be able to operate normally

9. What about the evidence base used to develop the matrix?

There is very little high-quality peer reviewed evidence (systematic reviews, meta-analysis or randomised controlled trials) either to support or to contradict some of our recommendations. There is no shortage, nevertheless, of opinion being expressed in print, along with studies that lack the rigour of peer review. Such poorly-founded "evidence" can spread quickly without much challenge.

It is important to be wary of any claim of evidence for one approach or another; particularly when the outcome associated with a specific risk might be catastrophic. Every day we learn more about COVID-19, but all evidence needs to be clearly and carefully appraised before it is relied upon.

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