

A NEW WAY FORWARD FOR DENTISTRY

BY JIM HAGUE

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Many of our customers have asked how and when I think dental practices can resume their usual activities.

Sadly, like everyone in the profession and industry, I can't give a definitive answer, but I do understand that during these tough times we must work together to get through these uncharted, choppy waters.

We are in an unprecedented, and perhaps previously unimaginable, situation. I have no magic wand, but I have been asked for, and I am happy to give, my engineer's opinion on possible steps going forward.

These are fast changing times, however, so please understand this is my considered and informed opinion, given with the best of intentions, but opinion, nonetheless.

So, in that light I will consider possible 'how tos' but leave the when to the politicians.

Just a couple of weeks ago, the rapid occurrence of events meant any suggestions would likely have been out of date by the time you'd read through to the end of a document like this one.

Although there is still change, it now seems possible to plan a little, or perhaps we have just got used to the quicksand?

Either way, the delay in writing has given me time to collate the facts from as many Industry, and other, sources as possible, including GOV.UK, NHS, PHE, BDIA, BDA, HSE, and HTM 01-05.

There is no official guidance yet as, of course, you know. When it does arrive, it may lack some sector-specific clarity, and almost inevitably put the emphasis on principals to ensure the health and safety of both staff and patients. People will return to work, so this is about minimising the risk and reducing the probability of cross-contamination.

Of course, our hope is for timely and specific official guidance but in its absence - and with the very real need to plan and prepare well in advance - please consider the following as my most relevant suggestions in the current climate.

Whilst I can't and won't guarantee they will be on any politician's list, I can and will guarantee the quality and sense of what follows.

'Of course, our hope is for timely and specific official guidance but in its absence - and with the very real need to plan and prepare well in advance - please consider the following as my most relevant suggestions in the current climate.'

Jim Hague, Managing Director,
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The issue

The government advised that the highest risk of transmission of respiratory viruses is during Aerosol Generating Procedures (AGP) – the Coronavirus particles are typically 60-140 nanometres in size and therefore a significant aerosol threat. Currently, most dental surgeries have not been designed to reduce this high risk.

Everyday dental surgery procedures, including use of slow speed handpieces, turbines, ultrasonic scalers, air polishers, 3/1 syringes, lasers and many others, are classed as AGP and create bio-aerosols. Fast handpieces and ultrasonic scalers are the worst offenders.

Social distancing in the clinical area could not work, of course.

Our intention, as always, is to aid our customers to look after themselves and their patients safely. Our customers work in very different practices, in different specialities and in different ways, so there will be no 'one size fits all' solution.

Unsurprisingly, perhaps, there are already companies advertising products, some of which may ultimately form part of a solution. Whether it is the right solution for your practice remains to be seen. Wherever you buy, we would urge you to consider a tailored approach for your very individual workplaces and workforce.

We need to find a solution that restores faith for both patients and staff, so that they know they are safe in your hands and in your surgery.

Potential solutions and how they can be achieved

We can either address and solve the aerosol issue or wait for mass vaccination/ inexpensive testing/ COVID-19 passports.

Achieving the latter two could take us well in to next year and, in any case, will be considered an addition and not a substitute for other control measures. So it would seem to me that dealing with the aerosol issue is our current most appropriate, and timely, step forward.

We may be almost at the 'return to work' phase for the profession; some are returning as UDC in days, some aiming for early June, some July and some beyond that.

But what will change to make dentistry possible?

- For the short-term, what procedures will be allowed and what is necessary to accommodate this?
- For the mid-term, once all procedures become possible, though still with COVID-19-related issues, what measures could be necessary?
- For the long-term, what further measures/ changes will become part of everyday life in a surgery in the future?

Moving forward, the options are to choose a short-term fix or a long-term solution, shaping the way the dental profession begins to provide care again.

I believe it would be a pity to make only temporary improvements, and then have to step back at some time in the future.

I do feel that this whole unfortunate episode will contribute to higher demands from associations/ departments/ commissions and patients alike in the future. A better understanding from the general population will surely mean a need for permanent change to working practices, in order to survive in a competitive industry.

At Hague Dental we embrace change, which has earned us recognition as a company likely to thrive in the future. Our role now is to help you create your 'new normal' so you thrive in the future, too.

To do this, in part we can look to the medical industry. Already adhering to a stricter rule book in some areas, they have blazed a trail in fighting the fires of the pandemic. Rather than reinventing the wheel, we can most certainly learn from their great work. In sensitive environments, we must do away with false, and blanket, promises. Regulated equipment with proven track records and that meet the necessary standards really is the only safe, and therefore sane, option.

In order to reduce the probability of cross-contamination significantly, we will consider a patient's journey through your practice, as well as alternative procedures and/or ways to reduce/control the aerosols. The right overall solution will likely include adaptations and improvements from both areas.

All changes, and new ways of working, will inevitably require sufficient training and practise.

It is important to allow sufficient time for this, in preparation for those first returning patients.

The patient journey

Telephone booking of the initial consultation in the same way but planning the initial consultation(s) to be remote.

To be informed by telephone of how the practice is running now, so patients are aware of what to expect and what to do.

Signing paperwork online, including parent/guardian signature so children can be treated alone.

Remote initial consultation – avoiding the patient entering the practice unless/until necessary.

Possible video conference with the dentist to assess a patient’s needs. Treatment planned and discussed remotely.

Charges to the patient need to be transparent – and remember that all those years of training and expertise have considerable value.

Online diagnostics – feedback has been that this is less straight forward, although the benefits are tangible.

Video consultations – planning treatments with a treatment care co-ordinator.

Remote risk assessment – if it is suspected that a patient has COVID-19 yet treatment deemed is essential, plan accordingly. Time will need to be allocated for deep cleansing the premises, appropriate PPE

is essential, and plan appointment timing to avoid contact with other patients, particularly in high-risk groups. Non-specific government guidelines will be updated regularly and more current than anything I could offer here.

COVID-19 testing one week prior to the practice appointment, if feasible in the near future, or the COVID-19 passport, assuming that it is proven that there is immunity from re-infection.

Patients to wait elsewhere outside the practice (in cars, etc) and to be brought in at the optimum time, so as to avoid waiting area congestion and not to hold up the surgery, with appointments staggered accordingly.

Patients' escorts, guardians or relatives to wait outside, having signed any necessary consent forms online, ideally.

Pre-screening – taking each patient’s temperature at the entrance to the building.

Hand sanitiser – to be pointed out and use ensured.

Social distancing in reception, waiting area and other communal areas.

w/c – not open to the public, or perhaps control air flow and gaps between users.

Reception – to install transparent screens, whether as a temporary or permanent feature to be decided beforehand.

Payments by card. Try to be

paperless, so avoiding cash payments, receipts emailed, etc.

Patients to take a pre-treatment anti-microbial mouth rinse.

Patients to take an intra-treatment mouth rinse – 30 seconds with hydrogen peroxide.

Treatment in the AGP surgery – it makes sense to condense as much necessary work as possible per visit to avoid too many visits on the same patient; so fewer repeat visits plus avoid wasted time and expense on donning and doffing PPE.

Final assessments – could take place outside of the practice.

It is felt that many of these changes to the patient’s journey may well end up permanent and form part of the post COVID-19 normal.

To reduce the risks of cross contamination

Separate sessions – AGP and non-AGP, having block sessions of non-AGP work to help with quantity of patients that can be seen. Initially, non-AGP work will resume from re-opening and all AGPs have to be avoided unless absolutely essential/emergencies. Then that will be permitted in the designated UDCs; however, we will soon need to provide rooms capable of providing all treatments.

Using more of the right PPE – aprons, masks, eye protection and gloves, etc. This will be an essential part of any plan;

in a nutshell, PHE guidance suggests fluid-resistant surgical face masks (FRSM) to be used for non AGP-procedures only, and a filtering face piece (FFP2 or FFP3) required for AGP procedures.

Filtration percentages:

- FRSM 62% filter
- FFP2 94% filter
- FFP3 99% filter.

If reception cannot keep the 2m distancing, then FRSM should be worn.

As HVE draws large volumes of air straight away from the oral cavity at the source of the procedure, a well-trained team can hugely reduce the aerosol and splatter. There is an 81-93% reduction in surface contamination using HVE.

This can be improved by using prophylaxis cannula - for the effective suction of aerosol, bigger particles and prophylaxis powder. They also allow for an ergonomic working position and a considerably increased suction volume (up to twice the aerosol intake compared to the universal cannula) and are very inexpensive and well recommended.

The Isovac is proving popular and simply fits on to your HVE hose via the correct connector. The Isolite claims to increase aerosol intake above that of HVE and rubber dam combined; this will need to be installed by an engineer.

One question being asked is whether hygienists will have to work 4-handed moving forwards? Perhaps utilising controlled HVE systems will

decrease this becoming essential.

Rubber dams - it has been proven that using rubber dam for procedures dramatically reduces the potential for cross-contamination. There is a 90-98% reduction in micro-organisms using rubber dam. After the SARS 1 outbreak in 2003, the combination of PPE, rubber dam and HVE provided a huge reduction.

Utilising a micro motor, with coolant air off, and using irrigation plus a speed-increasing contra-angle handpiece rather than a fast handpiece/ turbine where possible will reduce the AGPs generated at source.

Signage - to indicate when the surgery is in use and avoid unnecessary people within the room. Controlling the clinical zone is most important moving forwards.

Cocoon - this is a transparent shield over the patient's whole head and upper torso, incorporating holes for the dentist and nurse to allow access for hands. Although this would control aerosols and act as a barrier, it is felt that this would be cumbersome, restrictive, and expensive, and development past the prototype seems unlikely at this stage.

Additional/alternating surgeries - immediately reduces the down time between patients, and therefore allows a greater footfall. This allows sufficient time for aerosols to land, surfaces to be treated and water lines disinfected but of course, this is a luxury that

many practices do not have space to accommodate. Some customers have already looked in to fitting amalgam separation and/ or intraoral x-rays into what were hygiene-only rooms to give more flexibility moving forwards. This will future-proof and leave value in the practice long term.

Radiography - using extraoral rather than intraoral x-rays, if possible, will reduce the risks.

Silver Diamine fluoride (SDF) - using SDF as a preventive or cure on caries, to minimise use of turbines. Although the long-term effects of repeated exposure to silver compounds are not known, no adverse effects have been reported.

Waiting rooms - remove unnecessary items (like magazines and drinks machines), add hand sanitiser and air purification, regular cleaning throughout the day. Clearly mark flooring and chairs so patients observe the 2m separation.

Scavenging equipment - a way to control the aerosols' pathway, it is important to know what you are getting. These are systems for removing the waste gases from the patient, whether "active" as co-ordinated with suction systems, typically a scavenging mask used in conjunction with nitrous oxide mixes, or "passive" where the waste gases proceed down a pipe through to room ventilation.

Extraoral dental suction systems - incorporating high-velocity air excavation, placed near to the patient to gather as much aerosol as possible and to avoid it entering the surgery atmosphere (see air purification).

Pressurised rooms – positively pressurised rooms are usually designed to protect a patient or equipment within the room and negative pressurised rooms are used to contain airborne contaminants within a room. Operating theatres in hospitals around the globe employ ventilation systems to maintain positive pressurisation of operating theatres. This protects the patients and staff from the ingress of infectious agents, dust and bacteria by providing an invisible barrier of positive pressure when doors within these rooms are opened. It is the latter, negative pressure rooms or airborne isolation rooms that we have been producing for decontamination rooms for years – literally lower pressure than atmospheric qualifies. Surely this could be utilised within surgeries to discourage aerosols from leaving the surgery with the patient and entering the communal areas?

Air purification – this is the hottest topic at the time of writing, and I have given it its own title after this section. They are all capable of producing a negative pressure and can be used in conjunction with an extraoral vacuum close to the source to control the aerosols. Most systems offer portable, wall-mounted, or ceiling-mounted models.

Air-conditioning – currently avoid all use, in any location throughout your practice, due to the potential for transmission of the virus until further advice is given, I'm afraid. It looks like a lot of surgeries will reopen in time for the hottest months, too.

Paperwork – to be completely avoided wherever possible, certainly within clinical areas.

All items not immediately required for the current patient should be removed from the surgery.

Fogging systems – for enhanced decontamination. Although this would be potentially a great solution, I fear for the potential damage to surgery equipment and it is very expensive.

Dental unit water line (DUWL) disinfection – HTM 01-05 dictated that DUWLs should be flushed for a minimum of two minutes at the beginning and end of each day and 20-30 seconds between patients. Perhaps now for two minutes between patients?

Surface products – using the right chemical and material, now between patients rather than at the end of each session, will have a good bearing. It has been proven anti-microbial cloths are far superior at removing splatter than wet wipes, for instance. It has been found that the highest microbiological contamination in a surgery has been found on visors/ masks, the light head, spittoons and surfaces in proximity to patient.

As can be seen above, a few of these elements together may greatly reduce both air and surface contaminants. It is naturally important to ensure the appropriate combination (and resulting reduction) is chosen for all procedures that are to be carried out.

Dental staff health – it is also of paramount importance that

this continues to be monitored and risk assessments for all updated accordingly.

Air purification

As previously mentioned, filtration and disinfection units seem to have gathered a lot of momentum, and this is meant as a brief introduction. I would be extremely surprised if this did not form a part of the final solution.

I strongly believe, rather than looking at equipment claiming “virus killing” and “eradication”, which are readily available and questionable products, that it is definitely worth looking towards the medical industry.

The medical industry has already gone through a phase like this, and the equipment used must be well worth consideration with proven track records, standards and technology. There are many different ways of purifying the air; I have considered five to find the most suitable one for dentistry:

1. UV – generally it is felt that ultraviolet technology units are good for controlled small areas like laboratories and not ideal for the dental surgery. Required exposure times can be very long and the benefit in air filtration is unproven.

2. Ionisation – these systems tend to be less expensive, although they have inconsistent results and can produce ozone (which can potentially be harmful) and can release charged particulates into the ambient air.

3. Plasma – potentially okay, with strong claims but do have unproven benefits and may not be appropriate for dental, can also create unwanted by-products such as ozone.

4. PCO – photocatalytic oxidation – these are aimed as odour eliminators/ changing the chemical of the air rather than reducing particulate pollution and if not fitted with proper filtration would be ineffective for reducing general contamination in the ambient air.

5. HEPA – High Efficiency Particulate Arrestance – has been the gold standard in the medical industry for many decades. HEPA filtration is well known and with size 0.3 micron, or smaller, will remove at least 99.97% of particles and produce no harmful by-products. However, this type costs more as the filter is so dense and the machines need to be capable of forcing the flow. In the medical industry, these are typically used in operating theatres with laminar air flow systems, but for more other infection control environments as a simple ducted (i.e. not laminar flow) or freestanding system.

HEPA offers great long-term benefits, is a name that patients know and could take reassurance from (see below). It also reduces air pollen, dust, diesel soot, mould spores and harmful germs like the common cold and flu.

Lead times have been increasing as the hospitals have depleted stocks, so worth considering asap.

It may be ideal to use a scavenging type of extraoral vacuum and a HEPA air purification system together.

Whichever type of air purification system you opt for, make sure that it has the capacity to cope with the

volume of air in your room or uses at-source capture of contamination. Moving forwards, this can reduce the surgery downtimes to a minimum.

Consider that by purchasing cheaply online you may well end up buying a lower grade system that takes a long time to recirculate the volume. Imagine filling a bath with your 3/1 syringe, for example!

Also, as the industry is not regulated, be careful of over-accentuated and misleading claims. A proper HEPA filter has to be certified to the ISO EN 1822 standard, the most stringent HEPA filter test. Many hospitals insist on this test to have been passed to ensure a filter’s suitability and integrity for airborne infection control in critical environments.

Decontamination systems

Using more of the right PPE – aprons, mask, eye protection, gloves, and shoes – is as important as ever.

HTM 01-05 2013 edition has stated that every practice should be capable of meeting “essential” quality requirements and that there should be a plan to achieve “best practice”. Surely there will be changes to the essential protocol moving forwards and CQC inspections – when they resume – will have more firm requirements.

The environment in which decontamination is carried out should minimise the risk of recontamination of instruments and the possibility of generating aerosols. Keeping processed instruments away from the clinical area is important. It was permissible to store unwrapped instruments for one day in the

clinical area, surely now this will be limited to one patient? Perhaps a B type vacuum autoclave will be required?

The current quality for decontamination within practices varies enormously; so the starting point, in turn, varies so much, rendering it near impossible to provide a “one solution fits all” to re-opening with this pandemic still at large.

Perhaps there needs to be a solution for those practices that have already achieved best practice, and then one list of ‘must-haves’ to raise the essential level?

If best practice is not achievable, I would advise that handpieces, at least for this interim COVID-19 period, are stored outside of the surgery and brought in for each case, as necessary.

For best practice, the decontamination facilities should be clearly separated. This implies the use of a separate room or even rooms (for dirty and clean/ storage). This has always been the end goal for existing practices at the essential level to achieve; if this was ever to be insisted upon, then surely now would be the time?

Having written that, I feel that this would be unlikely (due to the sheer volume of practices that would be affected) and this would prevent necessary dentistry from being carried out, and practices from re-opening.

It may be that the level of decontamination within the practice supports the necessary solution within the surgery, i.e. if a decontamination zone is permitted within the surgery room then more modifications are

required to the surgery's clinical area to combat this – so that we end up with a comparative decrease in the probability of cross- contamination.

Plant equipment

Compressor – a dryer on a compressor provides a much better quality of air, so there is less chance of bacteria developing. The inlet to the compressor should be drawing in clean cool air, i.e. not recirculating air from the suction exhaust or surgery air from the previous patient.

Suction pump – it has been recommended that the pump exhausts through either a bacterial filter or to the outside environment. Now it could be important to provide both, i.e. an in-line biological filter on an exhaust to the outside, in order to take responsibility for the foul air emitted to passers-by. Perhaps, moving forwards, we need to use the correct chemicals between patients rather than just at the end of each session.

It would be advised to test the quality of the suction performance by flow meter at the oral cavity in order to ensure the correct pressure and flow, otherwise the probability will become distorted. There are, of course, ways to improve suction performance, by changing faulty hard pipework, soft suction hoses, cleaning regimes and surgical grade machines.

I am pleased to say that our installations have allowed for future modifications and the majority may not need to be altered at all. For example, our squat practice refurbishments tend to include purpose-built plant rooms with the associated equipment where the

compressor has an integral dryer and the suction system's foul air is exhausted away already.

Maintenance/servicing

It is extremely important to have kept on top of the maintenance of your existing equipment. Imagine finally getting back to work after all of this and then being prevented by having a break down.

It just doesn't bear thinking about, and I would rather broach it now to reduce the chances of an issue occurring and resulting in exactly that.

You will have followed some sort of closure protocol almost two months ago, and many will be running weekly checks to ensure all is in order. However, to re-open there needs to be another protocol- and in a timely manner.

Currently, I would recommend checking each item periodically and then repeating the closure protocol in an orderly way. When we get nearer to opening, there needs to be a full check that all is in order. Any issues, contact your engineering support team.

People have often opted for annual pre-planned maintenance visits to service their equipment in order to obtain the certificate, put it in their folder to show on CQC inspections. It's not the reason I would hope for, but it has still achieved a good result, whereas some manufacturers are recommending a whole list of parts are changed at a certain interval in order that the user can expect trouble-free ownership and the patient a quality treatment, hence the requirement in the first place.

I sincerely believe that servicing

increases the reliability and performance of your equipment, controlling the down time to a pre-booked and agreed day rather than at a time when you can ill afford it. The overall cost of ownership tends to reduce in relation to the number of emergency call outs required. Servicing is a relatively simpler variable to deal with.

Newer equipment is so often asked to perform many more tasks, with many more functions and features, and is designed to be routinely maintained.

Machines can go wrong no matter what is done, but the probability is so very much less when regularly serviced, making diagnostics very much more straight forward and the remedy quicker.

The future is daunting

It is now commonplace to have an integrated amalgam separation within, a separate in-line before or a passive amalgam separator after, the suction pump. Although this has little or no bearing on today's challenge, I believe it a good example as to how once this was a daunting topic and now is an everyday item.

Also this century, remember when HTM 01-05 was first released, then CQC inspections commenced and some principals were opting to sell up or preferring to retire early rather than take on these imposing new guidelines head on? Now these form part of our everyday practice life.

Today, we will potentially have a few additional items thrust upon us that will be daunting to some degree, but soon will be part of our normal life.

You are not alone, and your sales and/or engineering company is there to support you in this.

To conclude

I sincerely hope that there will be more support, and soon, for dental professionals, including the availability of development grants. We have already seen CBILS and bounce back loans becoming available over the last few weeks to contribute towards overheads and necessary remedial works. At the very least, the NHS framework will surely be adapted to accommodate fewer patients per session, naturally hopefully much more than this, and it would only be fair that clawbacks were not applied come March 2021.

When purchasing, please do consider the longevity of the item and explore the claims made by certain products, and bogus players pushing items on to you. There are lots that have been rapidly produced or altered and badged for a quick fix. The chances are these will not be successful and will make you regret the purchase. On the other hand, there is almost definitely a well-trusted and long-standing solution available to do the job well. Please don't feel pressurised into purchasing equipment, particularly when the evidence to support its contribution in tackling the issue is limited.

Exhibitions have historically been a great way to try out and select the appropriate products and/or equipment for your needs. At this time of great need, alas, there will be no exhibitions, surely until 2021. But don't despair and jump online to purchase. A great way to see products and ensure they are appropriate will be to visit showrooms with one-to-one appointments and

to organise trials/demonstrations.

If it was me, I would opt for PPE + HVE + micro/ electric motor + rubber dam + air purification linked to an oral vacuum/extraoral suction + negative pressure surgery + increased DUWL disinfections and then advertise this - it is so important that everybody is reassured so that you, your staff and patients alike can all feel more comfortable and safe.

You may be thinking, "Well, he would be saying that as wants to sell!" Actually, a lot of these items are not supplied by us and are relatively inexpensive and can be used for the long term.

Of course, there are more expensive items that would improve your adaptability that, yes, we can help with. Some people are already improving decontamination rooms and adding surgeries; we have future proofed practice layout designs to add further surgeries easily in many squat practices. But the timing must be right for you, so this is most definitely not intended to make anyone feel pressurised in spending a lot of money on equipment.

With treatments taking much longer, I would expect that the NHS model will be adapted to survive and all treatments, both NHS and private, will inevitably increase significantly in price given the need to see fewer patients per day per room, new and more stringent protective and disinfection procedures and products. Therefore, practice hours will inevitably increase and/or,

space permitting, more surgeries.

I feel that this whole episode will have a lasting impact on the population, and would imagine the future patient will be much more health/safety conscious and will see more value in the treatments that they are offered. Patients generally trust their dentists but will have more questions than ever, and this will be a great chance to educate and create a closer long-term bond.

If you have any questions at all, please don't hesitate in asking me or my team for support. That is what we are here for. Sometimes we will point you the right way, as many products mentioned are not supplied by us. We want you to feel confident so that this reassurance can filter down through your team.

On behalf of the team at Hague Dental Supplies, we hope that you and your family, friends and employees, as well as your businesses, make it through this difficult episode safely. To those who have lost loved ones or have seen their businesses suffer, our thoughts are with you and all those affected.

I do hope that this document has aided your ability to make an informed choice in how to move forwards, and wish you all the very best in doing so.

On your side since 1996.



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