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PROFESSIONAL BEAUTY GROUP

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FFP2

Smoke screening

British Medical Laser Association honorary secretary Jon Exley on managing the risks associated with covid-19 transmission during aesthetic laser procedures that create plume

Many practitioners are seeking advice on the potential risks of covid-19 transmission during laser and IPL treatments – particularly those associated with laser plume.

While there has not been any specific Government guidance for aesthetic clinics, every clinic owner should follow general guidance and complete a risk assessment for their business.[1-2] Social distancing and standard protocols should be put in place in areas like the toilets and waiting areas. It is also a good idea to carry out pre-treatment screening in the form of a questionnaire and/or by doing temperature checks.

The main problem with covid-19 is that a lot of patients are asymptomatic and may not even realise they have it, and it is these patients who could slip through the net and end up in the treatment room. That's the reason we need to take extra precautions with laser treatments – we have to assume that anybody could potentially be covid-positive.

LASER PLUME

Once we get into the treatment room and start lasering, there is an additional hazard that occurs that is unique to laser; the hazard created by laser plume.

The British Medical laser Association (BMLA) has put together some guidance which is available to download on its website[3], the main focus of which is how to manage

and mitigate the risks associated with laser plume and the transmission of covid-19. There are a number of ways you can do this, but first let's explore what laser plume is and how it relates to the transmisssion of coronavirus.

WHAT DO WE KNOW ABOUT LASER PLUME?

- It is generated primarily during ablative treatments
- Other treatments also generate significant plume (in fact all laser treatments have the potential to generate plume)
- Laser plume can contain viable HPV and HIV
- Analysis shows a variety of particulate sizes
- Laser plume contains aerosol.

Laser plume is essentially the smoke/debris that comes off skin when we are doing ablative laser treatments such as CO2 or Erbium: YAG. Practitioners carrying out ablative procedures are usually aware of this and take suitable precautions. However, where I think the industry is falling short, and what I think the covid pandemic has highlighted, is that actually every laser or IPL skin treatment has the potential to produce some plume, hair removal being a key example.

Hair removal actually generates significant laser plume containing little bits of vaporised hair and dust. In fact, practitioners who do a lot of hair removal often say how they have become accustomed to the smell of burnt hair and see it as a sign that the treatment is working well. But of course, if you can smell burning hair then you are inhaling this laser plume.

We might assume that heat from the laser will destroy any virus, but that's not always the case; there is evidence to show that laser plume can contain viable virus. HPV and HIV have been found to be contained within certain laser plume. In addition, laser plume can carry particles of varying sizes including microscopic particles known as aerosol.

When we link this knowledge to covid-19 we can start to see where the risks may lie. We know that covid is a virus, that it is carried in aerosol and that it is quite small in terms of its particle size. The conclusion has to be that, while we don't know for certain that skin cells carry the virus, there is a chance that the skin could be contaminated and therefore if we laser, we could create covid-contaminated plume.

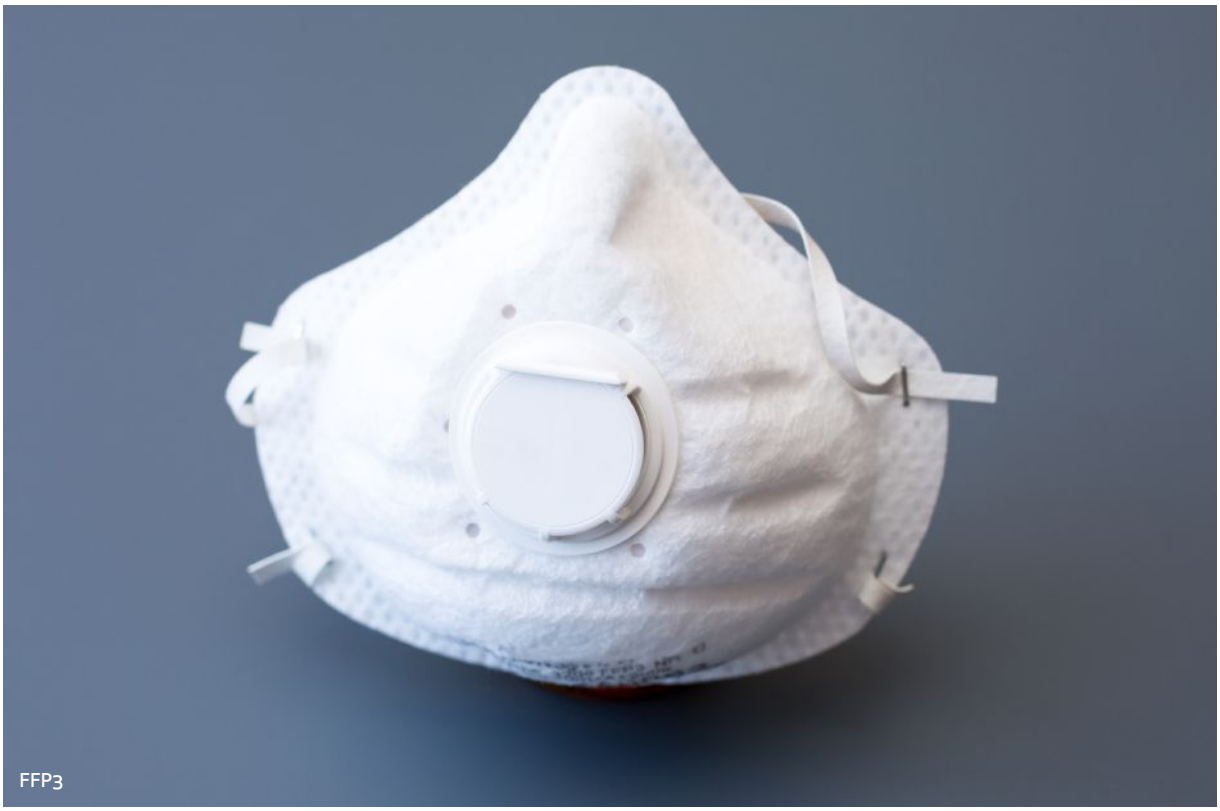
LASER/IPL AND AEROSOLS

- Aerosols are particles of respirable size which can remain airborne for extended periods
- Many laser treatments are known to generate plume and these are also believed to be aerosol-generating procedures (AGPs)
- Aerosol-generating procedures are understood to increase the risk of viral transmission, although the risks related to covid-19 transmissions are as yet not fully understood
- It is therefore advised (in the absence of evidence) that practitioners err on the side of caution and seek to protect themselves and their clients with appropriate personal protective equipment (PPE).

MANAGING THE RISKS

PPE

The main way to manage the risk of Covid transmission is with PPE. The BMLA recommends that in addition to the standard PPE (gloves, aprons, visors, etc.) and appropriate



FFP3

laser eyewear, practitioners performing laser treatments should use respirators, namely FFP2 or FFP3, to protect against the plume itself.

Respirators are different to masks; they are a defence against contamination from the outside world and designed to stop particles going into your lungs. There are different classifications. If you are carrying out laser treatments you should use medically-approved CE respirators such as FFP2 or FFP3 (FFP stands for "filtering face piece". FFP2 is designed to prevent 94% of particles getting into your lungs, whereas FFP3 is 99% effective. Respirators called N95/N99 or KN95/KN99 are American and Chinese standards.

The primary reason to wear a respirator during a laser treatment is to prevent inhalation of the laser plume itself. The BMLA's recommendation is that an FFP2 mask should be sufficient for most treatments but if you are treating above the clavicle or neck – so when you are performing facial treatments – you should upgrade to FFP3.

There are a number of reasons for this. First, there is an assumption that if we are treating above the neck we are going to have to ask the client to remove their mask and in doing so are increasing the risk to ourselves of infection.

The other reason is that a covid-positive patient is more likely to sneeze, cough and contaminate the skin around their mouth and face than they are on the rest of their body.

It only takes a small amount of a virus to enter your respiratory tract to potentially infect you, and this is why when the risk is high, the BMLA recommends FFP3 masks.

The Health and Safety Executive (HSE) advises fit-testing respirators and has created some guidance about how to wear them.[4]

Of course, laser goggles also must be worn, so make sure that the respirator is fitted well and that the goggles are not disrupting the seal.

HSE recommends that you take a break after one hours' continuous use of disposable respirators. The main reason is that there can be a build-up of condensation on the inside of the respirator, so prolonged use without breaks can affect the skin. Also, after wearers have used them for long periods they become looser and less well-fitted. Note that if there is an "NR" on the mask that stands for "non-reusable" and means you shouldn't reuse the respirator at all.

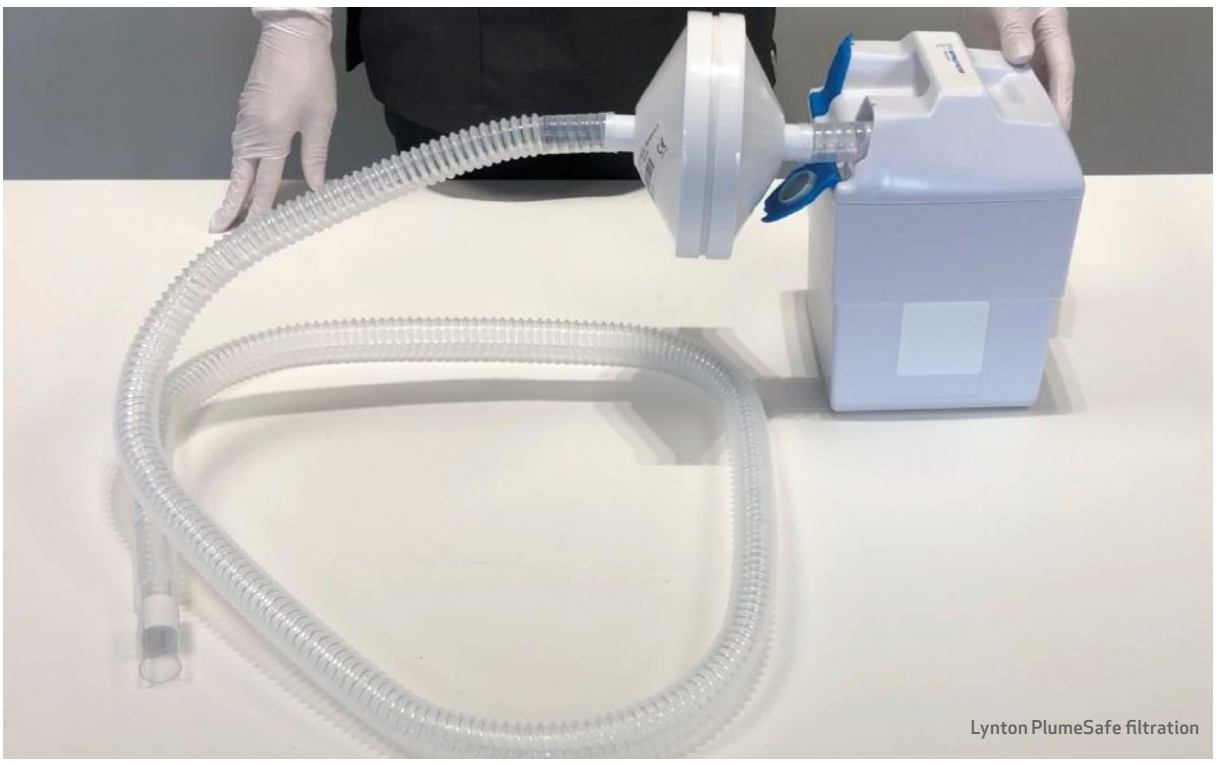
One other piece of advice, and something we've done in our clinic, is have practitioners put on all the PPE and actually have a go at doing some treatments wearing it before starting up again on patients. It's not easy to wear all this protective equipment and do laser treatments so it's well worth just having a practice putting it all on and checking you and your team can function effectively.

RESPIRATORS

- Make sure any facial hair does not disrupt the fit of a respirator
- Ensure hands are clean/washed
- Check the mask and its instructions (are the straps OK? Is there any damage or holes?)
- If there is an exhalation valve, check it's not damaged
- Insure straps are correctly positioned and nose-clip is pressed family to face
- Make sure the laser goggles do not interfere with the sale of the respirator
- Take a break after one hours' use (remove the mask carefully).

VENTILATION AND SMOKE EVACUATION

The BMLA's recommendation is to try and use whatever methods possible to allow air flow and create ventilation in



Lynton PlumeSafe filtration


Lynton PlumeSafe

the treatment room. This can be done mechanically using air-filtration units and smoke evacuator systems and you should be using ultra-low particulate air (ULPA) filters with these.

Most practitioners who use CO2 lasers probably already have a smoke-evacuation system. The sort of smoke evacuator that should be used now to mitigate the risk of covid transmission is the ultra-low particulate air filter. Smoke evacuators are excellent tools but very sensitive to proximity, so you have to get the end of the nozzle very close to the treatment site to ensure it is sucking enough of the smoke away. If you move away very slightly, certainly with some of the weaker systems, they very quickly become ineffective. Lots of studies have shown that this is a highly effective way of reducing laser plume and can really make a significant difference to the level of airborne particles.

Open windows too if you can. Not all treatment rooms have windows, particularly typical laser rooms, but if you have got an air conditioning unit with the ability to extract air and pump it outside, that is another option.

However, I don't advise using fans. The general advice is to try not to blow the air around too much because it's uncontrollable. A smoke evacuator will capture the debris in a filter but a fan could blow it all over the place and you won't be exactly sure where it is going. It's better to open a window.

LASER/IPL EQUIPMENT

Under most circumstances, even without cleaning or disinfection, the amount of infectious virus on any contaminated surface is likely to have decreased significantly after 72 hours. However, in order to minimise risk I would advise leaving plenty of time in between treatments to allow any airborne dust or smoke to dissipate or settle, and then to decontaminate by wiping down surfaces and laser equipment with alcohol wipes with a high alcohol content (70-90%).

PROTECT YOURSELF

- All laser/IPL operators should wear an FFP2 or FFP3 respirator during facial treatments, preferably with a face shield
- Good air ventilation should be used to clean the air between patients
- High-efficiency smoke evacuation systems should be used to reduce plume generated during laser procedures
- All equipment and worksurfaces should be decontaminated between procedures.

Lynton Lasers has produced a more general covid checklist. It includes information on laser treatments as well as general practice and procedures. It is free to anybody, not only Lynton customers.[5]

TOP TIP

There are some techniques you can use to reduce plume such as using gel on the skin. Any debris coming off the skin then gets trapped in the gel itself, which stops it becoming airborne.

It is in the interests of our industry that we all act responsibly. As we enter this new post-covid world we will have to take it step by step, and the guidance will no doubt change as we learn and discover more. **AM**

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Jon Exley is managing director of Lynton Lasers and Honorary Secretary of the British Medical Laser Association (BMLA). He has been involved in medical Lasers for more 20 years after undertaking his PhD in laser physics. Exley was recently appointed to the External Advisory Board for the University of Manchester (Dept. of Physics) and has represented the BMLA in the Expert Reference Group established by Health Education England (NHS), which developed a new educational qualification framework for the use of lasers, intense pulsed light and LED in non-surgical cosmetic interventions.