

## **Smoke Plume, Covid-19 and BMLA recommendations for Laser and IPL Clinics to open safely during the pandemic**

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Conversation with Ron Myers from The Consulting Room Group, Jon Exley – MD of Lynton Lasers: <https://lynton.co.uk/> and Mike Murphy, LPA: <https://mikemurphyblog.com/category/lpa-information/> concerning the latest BMLA guidelines published on 27<sup>th</sup> May: Resumption of Laser/IPL skin services post COVID-19 lockdown and protecting laser operators from hazards associated with smoke plume.

To view the 25 minute webinar visit: <https://vimeo.com/425544912/25bba5b5b9>

**Or read the transcript below:**

### **Ron Myers:**

My name's Ron Myers and I'm one of the directors of the Consulting Room and it's a real pleasure to introduce Jon and Mike today.

Jon is the Managing Director of Lynton Lasers and Mike is a laser protection advisor who set up the first laser tattoo removal clinic in the UK. He's been a consultant to numerous companies on everything to do with laser and IPL over the years. And he's also on, interesting enough, the board of directors of the UK Council on Surgical Plumes - <http://www.ukcsp.co.uk/> which is probably not a body that many people know about. So, what I wanted to do for start was just ask Mike to explain a little bit about the work that that council does both in the UK and internationally.

### **Mike Murphy:**

Yes, that's right. Myself and my colleague Dr. Kader, set up this council towards the end of last year. And it was really because we were both concerned about the lack of awareness of the hazards associated with laser plumes. Now, this has been a well-known issue in America for quite a few years and there's an international body set up there, and has been for a few years now. I went to a conference, one of the medical laser conferences there about three years ago and there was a very, very good presentation there from some people in Boston and they basically had taken a sample of air following laser hair removal and analysed it and they found that it was full of all sorts of nasties, like viruses and bacteria and carcinogenic chemicals and all the rest. And I thought, well, this is quite serious because if you're in a laser environment where you're breathing this sort of stuff in every day for a number of hours, then there has to be some potential hazard there.

So, Dr. Kader and myself decided, okay, well, let's try and raise this issue here so that people can find out more about it and hopefully take steps to mitigate against it. And then, of course, with the recent COVID pandemic, that's just highlighted the potential hazards even more than previously thought. So, if anyone's interested, you can find us online, UK Council for Surgical Plumes and you'll see all sorts of information there about what laser plume is and IPL, not just laser, IPL too, and then you can find out some information there.

**Ron Myers:**

Brilliant. Thank you, Mike. Okay, Jon, I'd like to go on to you now, if we can do, please. I know you've been very busy, not just with looking at running Lynton and obviously, looking at your clinic preparing for relaunch, but also with the British Medical Laser Association and being part of that advisory board. So, obviously, you have a huge amount of experience on everything to do with lasers both in terms of the manufacturing and also running a clinic. So, could you tell me about the BLMA recommendations that came out? I think it was just last week.

**Jon Exley:**

Yeah, they did. Thanks, Ron. Thank, Mike. I am our new secretary for the British Medical Laser association as well so that's where I sit on the committee.

My background is physics. I'm more of a physicist and I rely a lot on the medical colleagues to help put these guidelines together. So, they were really put together by our president, Dr. Vishal Madan.

But what's nice about the BMLA there are quite a mix of people on the board including ENT surgeons, a dental surgeon as well. So, it's been very useful getting information from different areas of the laser world, really. And I think what became apparent when we were pulling this guidance together is that there's some great information already out in the world about how to prepare clinics for reopening, but what was an area of controversy was the idea of laser plume and potential contamination through laser plume. And that's where we worked with Mike on these guidance notes as well just to bring in more expertise, really. And I think what we ... We debated a lot of things, but ultimately, what's been published now demonstrates or provides evidence that virtually every laser treatment in some form has a risk to produce laser plume and within laser plume, and I'm sure Mike will chip in here, if necessary, you generate aerosol as part of that plume itself. So, the visible part of the plume, the bit you see, like smoke, that's not technically aerosol, the particles are big, that's why you can see them. You can't see aerosol, they're microscopic. But the plume will contain them. And I think at first, everyone's familiar with the CO2 laser that ablates skin tissue. That clearly generates plume.

Most clinics are very familiar with dealing with that and we also know that that sort of plume can carry viral matter. So, we've always been used to perhaps trying to suck it away through smoke evacuation, or whatever, taking into account that viruses could be spread through that. What I think became clear to me, through doing this work now, is that there is potential for any treatment to create some sort of plume, even if it's just inadvertently. And I've got an example, hair removal.

I hear people in clinics talk about how you have the smell of burning hair.

I've had some practitioners say, "I know I'm getting a great result, because I smell the burning hair."

And that's clearly particulate matter in the air. So, if you're doing a vascular treatment, there is a risk that you're going to hit some hair follicles and generate some sort of plume. It's very unlikely with any laser treatment, you will generate nothing whatsoever. And so, the first part, I think, of the BMLA standards was this realisation that there's a risk in any laser treatment that you could generate some amount of plume, clearly some treatments far more than others. Okay? So, that's sort of part one.

And then the question then is what risk does that pose for COVID contamination? It's loads of other potential hazards that Mike's alluded to, but we were focused on COVID. And what we know about COVID is its transmission is through aerosol, largely or predominately thought from the respiratory

tract. So, breathing, speaking, coughing, sneezing, they're the mechanisms by which we were pretty certain or the world is certain that transmission occurs. But the question is, would it be carried in a laser plume that's been generated through a laser treatment?

And the answer is that's uncertain. Nobody knows for sure whether it would or it wouldn't. So, we had to assume at this point in time because of the lack of evidence, that we also protect ourselves against the fact that it could be carrying COVID. There's a paper actually, referenced in the guidelines suggesting that it's unlikely to be carried in the bloodstream, the COVID virus, other than in the respiratory tract itself.

So, I would suggest that the likelihood of a skin generated plume carrying the virus is probably small, but if you read the paper, there are a few percent of people who do carry it in bloodstream and in actual fact, it's more likely from, I think Mike said this in the past, that through exhaling sort of COVID virus, it lands on your skin and that's how it's on your tissue. And that's how it gets aerosol. So, ultimately, you got to assume it may be carried in the plume and the aerosol within that plume from any laser treatment.

So, the final bit of this equation is well, what do you do about that? How do you protect yourself, as an operator, against that hazard and the risk that it's carrying a live COVID virus. And that's where the guidance talks about different PPE that people should wear during laser treatments and other ways to reduce the potential contamination. And I think the last thing probably to mention briefly there is that the BMLA's taking the view that there's a higher risk of contamination for treatments in the facial area. It's more likely if COVID is put onto the skin through your own breath or sneeze or whatever, it's more likely to be around the facial, above the clavicle. And so, the additional precautions specified in the guidance for treatments above the clavicle, to below the clavicle and that's just different eventually.

**Mike Murphy:**

Can I just add into that? The contamination risk is a combination of factors. One, is obviously how much virus is in the air. So, that's the concentration. But the other main element of the risk is time. The longer you spend in an environment that's got some virus in the air, the higher your chances of contracting it and obviously, what we're trying to do here is reduce the cross contamination of this to as near zero. So, time is an element here and we discussed this in the BMLA guidance document that you need to really consider reducing exposure to potential asymptomatic patients especially in terms of treatments by reducing the times. So, you don't want to have typically with a high energy lasers, IPLs, such equipment, you don't want to have a long time treating those kinds of patients because what you're doing is you're just increasing the potential for cross infection.

**Ron Myers:**

Okay, cool. So, just to clarify, I know you talked about lasers and Mike, you talked about IPL there, I think that there's probably more intense pulse light systems out in the broader marketplace than there are lasers, so could you let me know if you've got an intense pulse light device that treats vascular as well as hair, whether or not that still fits in the same category from your perspective as being an aerosol generating potential hazard?

**Mike Murphy:**

Absolutely. Yeah. Just going from what John was just saying there, it doesn't really matter how you deliver that energy, the fact is you are going to stimulate a reaction in the skin's surface and whatever's on the skin surface is going to fly up into the air and it's potentially, it's infectious. So, it doesn't matter whether it's IPL laser, RF equipment, some other equipment that's quite ablative as well, anything that will stimulate the surface, if there's virus sitting on it, or virus sitting on the hair that potentially can get into the air.

Now, one of the things about hair treatment, for example, if you're using gel, which usually shields from killing the skin, then the gel will trap a lot of the stuff that flies off the skin. So, by all means, do definitely use gel for those sort of procedures that will help to reduce aerosol generation, but there are some treatments which obviously, we don't use gels for and they will be slightly more potentially dangerous.

**Jon Exley:**

I think that's a good point Mike raised is that there's actually some evidence, published work on the reduction in airborne particulates when you use gel and/or some sort of sapphire or quartz light-guides or tips. Essentially, most IPLs, you put a layer of gel on the skin and as you're firing the light, you're holding a solid surface, i.e., the end of the light-guide of the IPL against the skin's surface. Well, that layer of gel between those two surfaces is likely to capture a lot of that particle because it's not just that the particles can fly through the gel layer itself, you've got a quartz or sapphire solid block holding that in.

So, it may have good evidence for this, but there are some published papers talking about this that they do genuinely reduce the risk, but it's just about risk management, they'll reduce the risk. Whether or not they're completely risk free is obviously not the case, is it? But I think using gel, using IPL, some lasers now use a sapphire tip with a gel against the skin's surface. I think that would be the same, doesn't have to be IPL, and that mechanism of some sort of gel layer and particularly then with somebody pressing down on it, will capture a lot of that matter.

**Ron Myers:**

So yeah, that's a risk management technique, isn't it really? I was involved in running a clinic for 15 years and we had a smoke evacuator, generally more for fractional treatments that we utilised. I know that's not common in a lot of clinics and certainly not with people that would probably be using an IPL. So, could you talk about a smoke evacuator and how that reduces risk?

**Jon Exley:**

Yeah. So, smoke evacuators, are essentially suction units, you have a hose of some sort that you hold near the treatment site and they drag the particles and the air away from the treatment site. They're used regularly in hospitals, surgeons use it a lot and I think as you suggest, Ron, they're not commonly used in clinics, other than that, I think they're well accepted for CO2 treatments.

CO2 generates a lot of ... By its nature, it's trying to lighten skin's surface, matter into the air and they're generally done by medical professionals. So, that sort of treatment, so they're used to using evacuators. I think whenever you can smell burning hair, smoke, plume, whatever you want to call it, there's an argument that you should be using some sort of evacuation system really. I think the smoke evacuators, people should be looking at under these circumstances. It's clear that it's got to carry viral filter, capable

of filtering out virus because, I'll pass over to Mike here, but a virus is very small in its nature and not all filtration units are capable of extracting that from the air that goes through the filters. So, it would have to be a smoke evacuator with viral filtration within it. Is that right, Mike?

**Mike Murphy:**

Yeah. A lot of these filters are deemed HEPA filters, which are designed to remove particles down to I think it's 0.3 microns, I think, or something like that. Viruses are much smaller than that, but of course, the virus is ... Generally they'll be sitting on droplets of saliva or water in the air and it's the water droplets that the filters will pick up. They're much bigger than the virus. You can get finer filters, which go down to, oh, some ridiculously small size. I suspect that HEPA filters are probably sufficient, but if I was walking into a clinic where they're doing a lot of ablative type treatments or fractional treatments or something like that, then I might want to consider using ultra fine HEPA filters, rather than just standard HEPA.

But the other thing about that, you have to be aware of, it's interesting, there's a good report I read a couple weeks ago where the researchers, they changed the distance of the actual smoke extractor tip from the surface and just a small change of something like two centimetres, I think it's something like that, had a massive difference in terms of the amount of material getting into the air. So, if you are using smoke evacuators, plume extractors, then you have to be quite conscientious and make sure you are drawing out as much of the material as you possibly can. Otherwise, it'd become a bit ineffective.

**Jon Exley:**

Lynton's about to launch a smoke evacuation system that's been used regularly in surgery actually already, but we're advising the ultra HEPA filters and Mike's 100% right on that. I've heard many people say, "Well, I've tried smoke evacuation, it didn't work very well." And that's true. It's quite sensitive to how close you work to the treatment site. But we do get lasers for lung surgery and that creates loads of plume and loads of smoke basically and some of it's done by keyhole. So, it's sort of trapped inside. So, we don't fight a lot with machines to suck that smoke away so the surgeon can see what they're doing essentially.

You have to make sure that what you trap there, everything that comes out of there is going to be trapped and captured. And of course, remember then that the filters have to be changed, but they need to be treated like clinical waste because these filters are capturing all that virus. And so, in changing them you have to do it correctly. So, the filters we have come with instructions on how to expose them correctly. They even have little kits to put the filters into and zip them from a bag and so on. And I think that's important as well.

**Ron Myers:**

Excellent. Okay, thank you very much for that. So, I think the last thing I want to look at is the masks and the type of masks. So, I think the difference here really relates to the type of mask and the fit of it as well. So the filtering respirators that are recommended The FFP2 or three or the N95, I think is the American equivalent of them, I think those are the ones that BMLA are recommending, aren't they, for aerosol generating procedures?

**Jon Exley:**

Yes, that's right. So, a lot of this guidance is not in the BLMA itself, obviously, AGP is aerosol generating procedures. There are those guidance on what sort of mask you should wear and essentially, we've taken that guidance because we're saying that well, lasers do produce aerosol, so that's the guidance we've taken. But we're trying to balance this. It'd be easy to say you should take the best mask possible, the FFP3 standard mask. We know that has a better filtration for smaller particulates and would be safer, but we also know that they're hard to come by at the moment and that ... Well, we certainly wouldn't advocate anybody essentially redirecting NHS supplies to their clinic, so at the moment, we've tried to be as pragmatic as possible and said, "Well, the risk is lower we believe, when treating below the clavicle. In fact, a FFP2 to mask would be adequate and they do appear to be much more commonly available at the moment and more cost effective, but we recognise that there's a higher risk of COVID contamination treating facial areas and for that reason, we have to stick to the recommendation of an FFP3 mask under those circumstances. We also recommend a visor as well.

**Mike Murphy:**

Can I just jump in here? We do have to be clear about this because masks and respirators are not the same. If you look at the EU standards, a surgical mask is a medical device as is a respirator, but they're completely different and people get a little bit confused about this. I just published a new article in the Aesthetics Journal about this, just this morning actually, a surgical mask is designed to stop the wearer from infecting whoever they're treating.

It gives the wearer no protection at all from whatever's in the air. A respirator protects the wearer from everything in the air. But they can still breathe out stuff. So, if you're not in a clinical situation where you're treating with lasers or IPLs or whatever and you want to protect yourself against potential infection from your patients, then you have to wear a respirator, whether it's FFP2 or three or N95, N99, whatever, but I would also recommend that you make sure that your patients are wearing a surgical mask as well. So, that that minimises their potential for infecting the environment. If you've got reception staff who checked out fine and they're COVID free et cetera, then they're probably fine just sitting wearing a mask so they don't infect anybody else, they just need a mask. So, you do have to differentiate between the masks and the respirators. Respirators really are only for people who are at the sharp end and are actually treating patients, but everyone else I think, is probably quite safe wearing a mask so they don't infect anybody else if they're carrying a virus.

**Ron Myers:**

Excellent. I think that's really important to clarify because you're right, there is a difference between masks and respirators and I think people are getting very confused and I don't know about you, but I'm getting an email a day from people who are selling these things that I've never heard from before. And I think that there is a potential issue with counterfeit products as well, especially for the N95 or FFP masks.

**Mike Murphy:**

Actually, you just raised an interesting point there. Probably like yourselves, you've seen a lot of emails for KN95 and KN99 masks. Okay?

Which technically are respirators. Now, I am going to be a little bit confused because I thought, well, what is KN95? It turns out KN is a Chinese standard.

All right? And the standard is actually very good I have to say. It is equivalent to the EU standards or the American standards. My concern though, is that while the standard is good, whether the manufacturers will actually produce a product that meets that standard. So, we're all being sent all this stuff, emails, whatever, buy my KN95. That's fine if they actually attain the standard. If they don't, then you're putting yourself at risk. All right?

**Ron Myers:**

Yeah. Again, what we're trying to do is to lead people towards companies that have a heritage in distribution and a reputation in our marketplace and hopefully they'll be doing the appropriate due diligence to ensure that it conforms to EU or UK standards. So, Jon, just one final point on respirators, really, and I know you've obviously got a clinic to open at some point soon, what are the practical implications of getting someone fit tested for one of these respirators because I believe it's not just as easy as buying these?

**Jon Exley:**

No, no. And we've had this discussion offline, haven't we? The problem with all of this and the BMLA recommend that fit testing is important, understandably, there's no point having a fantastic mask if it's not fitting correctly and it's been bypassed essentially by gaps around where it fits your face, but how do you fit test a mask? People know how to do it, but how do we practically do it?

Because I've been online, there are demonstrations, there's all sorts of stuff, but it's knowing that you have essentially trained or had somebody who's competent show you and then show your staff and your people have got that fitted correctly. Unfortunately, I don't have a good answer to that at this stage. I don't think our industry does.

**Ron Myers:**

I don't anyone does.

**Jon Exley:**

I think that's a challenge that we ... The whole thing with the entire COVID situation is it's totally uncharted territory and we've all got to work through this together and come up with solutions and I think that's one of the areas still to work from.

**Ron Myers:**

Yeah. Yeah. Lovely. Well, thank you very much, gentlemen. Is there anything else that you would just like to comment on regarding the topic, that we're covering at this point?

**Jon Exley:**

Interesting. We sell lasers for I mentioned lung surgery and one of our surgical sales team's going into hospital to help with some training on the new laser they've got from us and of course, for treating the lungs. So I said, well, how on earth are they going to make sure that this is safe for you to be in theatres with them? And she said, "Well, very simply. They bring in the patient and keep them in isolation before treatment for about a week to 10 days and test them for COVID and make sure they're negative." So, the only sure way to be safe is just make sure you don't treat people with COVID.

**Ron Myers:**

Yeah. Which is interesting and obviously, that's why clinics are going through triage as well to ensure that nobody's coming in with live COVID, but I think all these other things we need to take into account from a risk management perspective.

Well, thank you very much, gentlemen. I really appreciate your time because I know you guys are both busy, so thank you very much and good luck with your projects and certainly for you, Jon, as well. I know it's not been an easy time for anyone in the distribution sector and clinic sector and you've got both things to sort out.

... Good luck all over in these next few weeks. Cheers. Thank you. Bye.