Why breathing correctly is crucial to Covid-19 prevention

Tim Ives discusses the importance of breathing when it comes to preventing the spread of Covid-19

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Tim began his career as a Dental Hygienist in the Royal Air Force before going on to teaching and then working in industry as a Global Education Manager. In 2017 he qualified as a Breathing Practitioner and then co-authored a book, LipZip: breathe better to live better (www.lipzipbook.com) which was based on individual patient cases he had successfully treated. During the Covid-19 pandemic he has been helping dental professionals suffering from Covid-19 with their breathing related issues and running online courses to teach health care professionals about breathing.

Covid-19 has disrupted all of our lives like we could never have imagined. It has radically changed the dental world. World research into coronavirus has been moving along at a rapid rate so we can all get back to 'normality' and to prevent a global economic collapse. We still have a long way to go before we can start treating patients using our full armament.

There has been a plethora of information flowing in our direction from so many sources. Some of it has been conflicting and when this happens, we often miss the obvious. The advice regarding PPE for the dental world has been an ever-changing story.

But if we stop and think about how the virus is transmitted and how the virus travels through our bodies, we can more effectively prevent an infection. I believe there has been some critically important information that is not currently being disseminated.

First line of defence

We are grappling with the various different masks that we have to wear depending on the risk assessment. But what is far more important is how we breathe when we are wearing a mask and when we are not wearing one. First and foremost, nose breathing is our first line of defence against any unwanted particles as it acts as a filter.

The vast majority of potentially harmful bacteria, micro-organisms and pollutants will get trapped in the nasal mucous. As a result, anything inhaled directly into the lungs can potentially stay inside for up to 120 days.

Please consider this when talking to your patient. You should at all times slowly inhale through your nose, then speak and then exhale slowly out through your nose. Remember when you are mouth-breathing, you are bypassing your natural respiratory defence. If you are mouth breathing behind your mask when operating, you are increasing your risk of infection.

Preventive service for patients

Identify your mouth breathing patients and inform them of the higher risk of infection versus nose breathing. This will also be an additional preventive service to your patient.

Mouth breathers also typically inhale a much larger volume of air so again, this will increase their risk of infection. Mouth breathers typically inhale between 10 to 15 litres of air per minute and a nose breather would inhale four to six litres per minute (McKeown).

Nitric oxide is a colourless gas which is continually produced in human paranasal sinuses. The next critical point about mouth breathing is that it will decrease your nitric oxide levels in your nasal cavity and the opposite for nose breathers (Tornberg, Marteus, Schedin). Nitric oxide is toxic to coronavirus so higher levels will help prevent infection (Martel). Additionally, smoking reduces nitric oxide production.

Why are we not washing our noses?

Now, let's consider the latest evidence informing us about how the virus travels through our bodies.

The virus first establishes itself in nasal cells. Research from the University of North Carolina indicates this is where the virus starts. The receptor on the host cells that Covid-19 requires to attach itself is most abundant in the cells inside the nose. These receptor cells are far less abundant in the lungs (Hou, Okuda, Edwards).

This is not an open door to ignore my previous information and start mouth breathing to bypass the nasal cavity. You would potentially introduce large volumes of Covid-19 directly into your lungs. But what we should be considering is how can we provide additional measures to prevent infection in our nasal cavity?

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If we are washing our hands, why are we not washing out our nose?

Recently, Xlear, a US-company that manufacturers xylitol based nasal sprays undertook research at the University of Geneva (Switzerland) and the University of Utah (USA), which looked at whether any of their sprays had an effect on Covid-19. They discovered that the xylitol and saline nasal spray which has been on the market for 20 years and has the ingredients, xylitol, saline and grapefruit seed extract is effective in killing the virus.

Extra careful

When they further researched the ingredients separately, they discovered it was the grapefruit seed extract that was killing the virus – not the saline or xylitol (this is not yet published but I have viewed the reports from both universities). Human trials are now underway.

Historically there has been extensive research on the antimicrobial effect of grapefruit seed extract and this research continues. This particular nasal spray is safe for everyone to use from toddlers to senior citizens. The inventor, Dr Lon Jones, actually developed it for his granddaughter when she was a baby to prevent recurrent ear infections. The baby's mother squirted the nasal spray into her baby's nose with every nappy change. She stopped getting ear infections and the spray became the best xylitol-based selling product in the USA (Jones).

In conclusion, breathing through our nose whilst wearing a face mask and when not wearing one is key to preventing a Covid-19 infection. Be extra careful when speaking not to switch to mouth breathing. Please also present this information to your mouth breathing patients.

Additionally, use a xylitol and saline-based nasal spray that contains grapefruit seed extract as an additional preventive measure.

Tim is planning future breathing and oral myology related online courses.

If interested, please contact him at

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or keep an eye on his website

www.lifelongeducation.co.uk.

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