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Smoking in **COVID-19** times

POSITION DOCUMENT



Document for Health Care providers



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Do smokers have higher risk of acquiring SARS-COV-2 infection and developing COVID-19?

Tobacco smoke injures several defense mechanisms of the respiratory system, cellular and humoral immunity, and in early stages affects non-specific mechanisms such as mucociliary clearance mechanism and produces also inflammation.^[1] These alterations increase the development of bacterial or viral respiratory infections and could explain why smokers are more likely to acquire respiratory infections such as influenza, pneumonia or tuberculosis, these three becoming important causes of illnesses and death in this population group. There is strong evidence indicating that smoking is a risk factor for contracting community acquired pneumonia (Odds Ratio (OR) 2.4)^[2], invasive pneumococcal disease (OR 2.4 to 4), other capsulated micro-organisms,^[3] and viruses that cause common colds, including coronaviruses.^[4] For decades, it has been known that there is a strong relationship between smoking and suffering from influenza, especially H1N1, (OR 5 to 6).^[5,6]

The use of electronic nicotine delivery devices (known as electronic cigarettes, e-cigs, or vapers), heated tobacco products, as well as exposure to “second-hand” smoke, exposure to indoor and outdoor air pollution from solid fuels (wood smoke), cause users to be exposed to fine particles and toxins, which cause alterations in respiratory defense mechanisms similar to those produced by burning tobacco.^[7-9]

Tobacco smoke increases apoptosis and viral replication of the Respiratory Syncytial Virus^[2] and de-

creases the innate immunity of respiratory cells to rhinoviruses.^[10,11] In 2012, during the outbreak of MERS-Cov (Middle East Respiratory Coronavirus Syndrome) tobacco use was identified as an independent factor in infection.^[12] Thus, it is expected that smokers are more likely to become infected with SARS-Cov-2, a new respiratory virus that causes COVID-19 disease, or that COVID-19 affects them more severely. Furthermore, SARS-Cov-2 interacts with the Angiotensin Converting Enzyme 2 (ACE 2) receptor at the alveolar level,^[13] in order to enter the cell and cause the disease. Wang et al. reported a study showing that smoking is associated with an increased expression of the ACE 2 receptor and could give smokers a higher susceptibility to COVID-19.^[14] However, this possibility has been controversial in a recent publication.^[15] On the other hand, the act of smoking or “vaping” (and therefore the act of bringing your fingers to your mouth) increases the possibility of transmitting the virus through the mouth, if cigarettes, electronic devices, waterpipes (also called hookahs) or marijuana cigarettes are contaminated they could act as fomites (inanimate vector) for the virus.

As water pipes are often used in social environments, the act of sharing the pipe leads to two potential risks factors; social overcrowding and sharing utensils such as mouthpiece with potentially infected people, and together with hand to mouth proximity without keeping a proper hygiene, increases the possibility of acquiring COVID-19.^[16]

If smokers acquire covid-19, do they have a more acute progression or a worse prognosis?

Two observational studies from China that included 78 to 1099 individuals infected with COVID-19 show an increased risk of severe progression in smokers compared to non-smokers.^[17,18]

A logistic regression analysis carried out over 78 patients at the beginning of the pandemic, showed tobacco use as a significant factor (27.3% vs. 3.0%; OR 14.2 CI 1.57-24 p = 0.018) as well as age, respiratory failure, severe hyperthermia and increase of C-reactive protein levels, and low levels of albumin.^[18] In the investigation made by Guan et al., upon a total of 1099 patients with COVID-19, in which it was taken into account the severity of symptoms and a composite outcome variable (Intensive Care Unit (ICU), mechanical ventilation or death), the condition of being a current smoker was related with severe symptoms and showed statistically significant results (16.9% vs. 11.8%) and with a worse outcome (25.8% vs. 11.8%). The condition of being a former smoker also showed differences, but of lesser magnitude (5.2% vs. 1.3% and 7.6% vs. 1.6% respectively).^[17]

In a systematic review, Vardavas et al. suggest that, although these data require confirmation and

adjustments for other risk factors, it should be noted that tobacco use is associated with a poor evolution/poor prognosis of COVID-19 and more serious results such as intensive care, mechanical ventilation and death, estimating the Relative Risk (RR) of 2.4 (95% CI 1.43–4.04) for this adverse result.^[19]

World Health Organization (WHO) states that tobacco use dramatically increases the risk of many serious health problems, including respiratory problems (such as lung cancer, tuberculosis and Chronic Obstructive Pulmonary Disease - COPD) and cardiovascular diseases. While this means that quitting is always the best decision, it is important for preventing SARS-Cov-2 infection or avoiding complications from COVID-19.

Additionally, comorbid conditions may be held better by a former tobacco user when becoming infected, because smoking cessation has an almost immediate positive impact on cardiovascular and lung function, and these improvements only increase over time. Such improvement may help patients respond to the infection and reduce death risk. Faster recovery and milder symptoms also reduce the risk of transmission.^[20,16]

Recommendations

Considering the available information, **it is important to note that smokers and users of inhaled substances, would have more risks factors in the COVID-19 pandemic, such risks are added to those already known that tobacco consumption causes. Therefore, smoking cessation becomes a relevant preventive measure to defend against SARS-Cov-2.**

The associations, organizations and scientific societies that sign this document state the following:

1. The population should note that smoking and vaping increase the risk of becoming infected with SARS-Cov-2 during the COVID-19 pandemic.
2. Smokers should know that are more likely not only to develop COVID-19, but also to have a poor prognosis.
3. Emphasizing the importance of Smoking cessation and promoting the use of available resources to assist smokers in this decision, especially in those methods that do not require the presence in health care centers, such as help lines (quitlines), apps, video consultations, teleconsultations.
4. Discouraging the use of hookahs, the use of electronic nicotine delivery systems (electronic cigarettes or vapers) and heated tobacco products as they can act as fomites that spread the infection, apart from the damage caused by their use.
5. Emphasizing, during quarantine, the importance of having 100% smoke-free public and private environments.
6. Contributing in the appropriate health decision making by bringing solid evidence on the impact of smoking.

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