

CO-CURRICULAR ACTIVITY FOR CLASS 12

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About COVID-19

Corona viruses (CoV) are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). A novel corona virus (nCoV) is a new strain that has not been previously identified in humans.

Corona viruses are zoonotic, meaning they are transmitted between animals and people. Detailed investigations found that SARS-CoV was transmitted from civet cats to humans and MERS-CoV from dromedary camels to humans. Several known corona viruses are circulating in animals that have not yet infected humans.

Common signs of infection include respiratory symptoms, fever, cough, shortness of breath and breathing difficulties. In more severe cases, infection can cause pneumonia, severe acute respiratory syndrome, kidney failure and even death.

Standard recommendations to prevent infection spread include regular hand washing, covering mouth and nose when coughing and sneezing, thoroughly cooking meat and eggs. Avoid close contact with anyone showing symptoms of respiratory illness such as coughing and sneezing.

COVID-19 pandemic for Pediatric Health Care:

The recent Corona virus disease 2019 (COVID-19) pandemic outbreak has forced many countries to adopt specific austere "lockdown politics," which had reduced the spreading of the infection in China, South Korea, Japan, Hong Kong, and Singapore, and have more recently started to slow down the infection rates in many European countries, severely hit by the epidemic (e.g., Italy and Spain).¹⁻²⁻³ Considering the lack of vaccination, it is reasonable to think that, especially for children and older people, most of these lockdown measures will be prolonged for the next months, even if it is still too soon to precisely predict for how long.

In this context, many nations are experiencing an unprecedented distortion of social habits and medical assistance for people and patients of all ages, including children. Interruption of school, sport, and other social activities is

forcing children to stay home for most of their time, in close contact with (often idle) parents. Moreover, lockdown has a direct effect in the reduction of activities in non-COVID emergency rooms and hospital wards caused by the shift of personnel towards COVID-units and by a diffuse "germ phobia" (fear of germs and infections, and as a consequence of hospitals). In most of the hospitals many "COVID-units" (as well as COVID-pediatric units) have been quickly created, and, at the same time, in the other units, activities have been focused more on patients affected by severe and acute conditions, reducing the care and assistance for patients affected by chronic or rare diseases.

This "motionless revolution" is taking to Health Care personnel and patients many disadvantages, with inestimable consequences, but also some opportunities that will be unique and reproducible with difficulty when the emergency will cease.

Disadvantages

Even if COVID-19 does not seem to affect children severely, many pediatrics wards have been focused more on the emergency of COVID-19-related issues. For this reason, attention on many other acute and chronic diseases, especially those rarer, may be lacking. This scarcity of interest may cause, particularly in childhood, severe problems or even death. Politicians and physicians may be distracted by COVID-19-related issues, but also parents or even the same young patients, as these last's attention may be focused only on news and information related to COVID-19, misunderstanding some symptoms or paying less attention to their (chronic) diseases.

Neuropsychiatric and psychological issues related to lockdown are another significant issue. The house confinement for children can be easily practiced in the first weeks, as they can be particularly fascinated by unexpected and new habits, but a prolonged lack of routine school programs and housework, as well as sport and leisure activities, could increase the occurrence of psychological consequences and distress.⁴ More than other primates, *Homo sapiens* is a highly social species, and children develop in the first years of their life specific social abilities exclusively out of their houses. It is reasonable to think that we will face an underestimation of children needing school assistance for (missed) learning difficulties if schools will be closed until September 2020. Adolescents and older children are at high risk of cell phone, computer, and other internet devices overuse, which has been linked to obesity and its related issues. Moreover, spending more time in non-filtered social networks, they could be

also invested by fake news and anti-scientific theories related to COVID-19, increasing their fears and phobias.

Lastly, the economic breakdown, expected in most of the countries, will probably involve the national health systems, especially pediatric departments and units not involved in emergency and infectious diseases, limiting the experience, progresses, and even the simple management of many genetic, congenital, and chronic disorders, with severe social effects, especially for children.

Opportunities

From the first reports from Eastern countries, we know that, in children, COVID-19 manifests with a milder course and a more favorable outcome, with only a minority of patients presenting with complications.² Mortality under 18 years of age is exceptionally low, differently from other well-known “historical pandemics” (e.g., influenza, measles, polio, smallpox). Such favorable outcome in children is matter of debate, and many “causes” have been proposed, including the role of active immunization schedules for other viruses performed in the first years of life, the simultaneous presence of other viruses in the mucosa of lungs and airways, common in young children, which could limit the growth of severe acute respiratory syndrome corona virus 2 (SARS-Cov2) by direct virus-to-virus interactions and competition; important factors seem to be the under-expression of angiotensin-converting enzyme 2 receptor necessary for SARS-Cov2 binding and infection, and a milder inflammatory cascade, as children usually do not manifest, in respiratory infections, the final hyper inflammatory phase that leads to severe acute respiratory distress syndrome, impaired cardiac function, and death.³⁻⁴⁻⁵ Studying pediatric patients will give the chance to investigate all these factors *directly*: key results could come evaluating the immune response of asymptomatic children compared to symptomatic, or comparing children and adults within the same families or ethnic groups.

Another opportunity will come—paradoxically—from the lockdown politics. In no other period of the recent history, children have been forcedly restricted to their houses, with closure of schools, and strong limitations of social and sport activities. A significant decrease of many (other than-COVID-19) infectious diseases has been observed in March in Italian children. In this setting, a reconsideration of many (common) problems of pediatric practice, from chronic cough to unexplained fever will be possible, withdrawing the bias of common infections (typically spreading in schools): many pediatricians could

have the possibility to re-diagnose chronic cough as caused by gastro-esophageal reflux, in-house allergens, respiratory tract malformations, and other non-infective causes; others could have a higher chance of investigating recurrent febrile episodes as caused by genetic, autoimmune, or oncologic disorders.

An (inevitable) opportunity may come from the increased use of tele-medicine.⁶ It is well known that visiting the patient is often necessary and allows to discover signs more than any phone-based consult. However, with people limited to their houses, telephone calls of parents describing symptoms in order to avoid the spreading of the infection are encouraged by the health governments and are becoming more popular, especially by video-phone applications. It is reasonable to think that when the emergency will end, physicians will prefer to see patients *directly*, but at the same time the increased experience in tele-medicine will allow the proposal of specific guidelines from many pediatric societies on tele-medicine approaches, maybe trying to answer an old dilemma: can patients skip the doctors' visits?

The decrease of access rates to emergency rooms and hospital wards is addressing pediatricians' attention mainly to acute or severely affected children, mostly non-COVID. In the past 2 months, it has been more likely to admit (only) patients affected by diabetic ketoacidosis or epileptic status in the units of general pediatrics and to focus more the daily activities of medical personnel for the treatment of these diseases, thus causing a more "challenging" daily routine for caregivers and a more clever use of human resources.

Lastly, some positive consequences in the organization and consideration of health systems are expected: economic resources for medicine and prevention will be greater, even in the (dramatic) setting of a global gross domestic production decrease. At the same time, recommendations coming from evidence-based medicine will be followed more willingly, and (hopefully) non-scientific statements, such those coming from anti-vaccinations movements, will be rejected with much more strength.⁷

We are still facing the initial phase of the COVID-19 pandemic. It is still premature to estimate its consequences in the highly connected world of 2020: the first wave of the disease is still ongoing in many countries and we cannot exclude the occurrence of other waves, nor quantify the impact of such pandemic in our future habits. Consensuses or guidelines of pediatric societies are urgently needed in order to avoid the effects of the disadvantages of this pandemic, but also to catch the opportunities related to this unique scenario.

Answer the following questions;

- 1. Is there any chance that the 18 month timeline for development of a vaccine can be shortened, and by how much?**
- 2. What do you think about China's response to the outbreak? How would you rate their response on a scale 1-10?**
- 3. Should there be a national shelter in place order? Why or why not?**
- 4. What changes are we going to have to make to how businesses operate to maintain our economy while providing social distancing?**
- 5. Is it possible that a 2nd wave could come out?**
- 6. What precautions should I take when delivering things such as groceries to my grandparents to limit my exposure to them?**
- 7. How Does Coronavirus (COVID-19) Spread?**
- 8. Can Someone Who's Infected Spread Coronavirus (COVID-19) if They Don't Have Symptoms?**
- 9. Is My Child at Risk for Coronavirus (COVID-19)?**
- 10. Can Someone Get Coronavirus (COVID-19) From Mail or a Package?**
- 11. Who Should Wear a Face Covering?**
- 12. What Should I Do if a Family Member Has Symptoms of Coronavirus (COVID-19)?**
- 13. How Do Doctors Test People for Coronavirus (COVID-19)?**
- 14. How Can We Protect Ourselves From Coronavirus (COVID-19)?**
- 15. How Is Coronavirus (COVID-19) Treated?**
- 16. Should We Cancel Our Travel Plans Due to Coronavirus (COVID-19)?**
- 17. What Is the Future of Coronavirus (COVID-19)?**
