

TAFS update on COVID-19, 24th April

SARS-CoV-2 keeps the world in suspense. The global number of cases is steadily increasing, and more deaths are to be mourned. At the same time, a positive trend regarding a relaxation of the restriction measures can be observed in several countries, signalling that we are on the road to normality.

With this regular update, TAFS wants to provide its members with a summary of valuable information on current developments concerning COVID-19.

Vaccination

As of today, research teams around the world are working on the development of a vaccine against SARS-CoV-2, resulting in more than 70 vaccine candidates in the pipeline. The predominant vaccines types under development are protein subunit-based vaccines, followed by RNA-based vaccines.

Other research groups are working on live attenuated virus and inactivated virus vaccines, as well as on vaccines that use a viral vector. All these different strategies have advantages and disadvantages, but it is a must that any vaccine for COVID-19 needs to be safe and efficient.

A vaccine would allow for the protection of the population from infection. To meet that goal, a high vaccination rate of about 70-80% within the population needs to be achieved. This level would most likely stop the virus from spreading and allow the relaxation of restrictions on social distancing and other measures. Without a vaccine, we have to wait for the development of natural immunity within the population, which takes, based on current implemented measures, about 1-2 years.

We have to keep in mind that developing a safe vaccine takes time. Therefore, we probably cannot expect to have a vaccine against COVID-19 broadly available before next year.

Exposed population

A big question is currently how many people were exposed to the virus and have developed immunity. To achieve immunity, the immune system needs to create an immunological memory. The related memory cells, which belong to the adaptive or acquired immune system, are capable of memorizing the pathogen and thus reacting adequately when confronted with it again. An antibody response can be introduced and measured by both the innate and the adaptive immune system, but only the latter will result in a protection. Therefore, simply testing antibodies in a population does not necessarily indicate protection, and further investigation is needed to inform meaningful conclusions and proper decision making, including a relaxation of current social distancing measures.

SARS-CoV-2 in animals

There are increasing numbers of reports of infected animals, and it can clearly be stated that SARS-CoV-2 does infect a range of animal species, including cats, dogs, ferrets, bats etc. Experimental infection trials also showed that pigs and chickens cannot be infected with SARS-CoV-2, which is good news.

From the current, limited reports on SARS-CoV-2 in pets, it looks like most cases are asymptomatic and only a few show clinical signs. This might reflect the possibility of a similar infection course as observed in humans, with a majority of people having no clinical symptoms at all. The common understanding is that animals are not the driver of the current epidemic. However further investigations are needed to understand the dimension of infections in animals, especially in pets. Albeit a broad screening without a clear road map on what to do about pets that test positive is not recommendable.

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