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The National Academies of Sciences, Engineering, and Medicine. *Rapid Expert Consultations on the COVID-19 Pandemic*. Washington: The National Academies Press; 2020.

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The National Academy of Sciences is a non-governmental, non-profit organization in the United States, formed by recognized researchers. The National Academies Press (NAP) publishes reports from the National Academies of Science, Engineering and Medicine, which provide expert analyses to solve complex problems and inform public policy decisions for entities or companies[1]. *Rapid Expert Consultations on the COVID-19 Pandemic* exemplifies this joint effort. This is a relevant work with a robust scientific material about the pandemic of COVID-19, caused by the SARS-CoV-2 virus, based on evidence available in a context that demands fast speed responses, but not always definitive. The demand for information is a constant in the pandemic, sometimes even before the peer-reviewed articles are released. Therefore, the book is a relevant piece of work and brings experts' contribution in their areas of knowledge.

As a result of eleven rapid expert consultations, the work summarizes the available information to answer about COVID-19. Consultations are found in separate sections, displayed into chapters and timely ordered (3/14 to 4/8). The chapters have the same structure in the title: *Rapid Expert Consultation on "specific topic" for the COVID-19 Pandemic*. Specific topics are indicated in this book review.

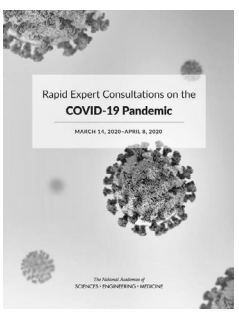
The first consultation – *Severe Illness on Young Adults* – addresses severe illness in young adults without comorbidities. Studies in Italy have pointed to a possible cause related to a viral genetic change with modifications in susceptibility, but experts concluded that it was not possible to distinguish whether serious cases represented a small fraction of a high number of infected young adults or a change in the age severity spectrum.

The second chapter – *SARS-CoV-2 Surface Stability and Incubation* – concluded that the virus's survival ranged from 4 hours to 2-3 days, and, regarding incubation, that viral excretion would occur before symptoms, recommending quarantine for exposed people for at least 14 days. This recommendation is followed in most countries.

On *Social Distancing* the separation of the infected from the non-infected persons is emphasized, including the schools' closing to the use of masks – an aspect that will be dealt with in the book. The ideal time for relaxing or tightening of social distance is still unknown, but experiences from other countries begins bringing evidence in this issue.

Data Elements and Systems Design for Modeling and Decision Making is a response to the query on how to deal with large volumes of data brought by the pandemic occurrence. Important aspects in decision making are: technical aspects, related to software engineering; the need for the data that refer to surveillance, clinical information, human viral genomics, equipments' supply and logistics; population data (social aspects, distribution and behavior).

SARS-CoV-2 Surface Stability and Incubation distinguishes studies on virus stability and incubation in experimental study designs and natural history studies. The former assesses the virus's survival at various temperatures and surfaces; those of natural history took place in hospitals or cruise ships. Inverse correlation between temperature/humidity and incidence of COVID-19 has been obtained in some studies but they are still inconclusive. Besides, tests quality that detected virus is also questionable. About incubation time, experimental studies on animals are expected for the near future.



Crisis Standards of Care (CSC) consultation deals with situations of widespread disaster or catastrophe, that change the usual patterns of health care. Guidelines, ethical aspects, education and communication, legal aspects, and indicators for the beginning of the CSC are systematized, with emphasis on decisions based on scientific evidence and clear and direct communication that involves providers and users.

Experts conclude that the virus can be spread by air (breath/speech) in *The Possibility of Bioaerosol Spread of SARS-CoV-2*. There is less amount of viral RNA in the environment with surgical masks use: one of the reviewed studies indicated detection of viral RNA in 30% and 40%, respectively, of droplets and expiratory aerosols of patients without a mask, but no virus was identified in the environment when surgical masks were used[2]. Given the scarcity of N-95 masks, mostly intended for health professional use, cloth ones are recommended. Studies that were released after this consultation response evaluated

fabrics and designs for efficient filtration[3] and comfort[4].

Virus relation with temperature and humidity and potential seasonal disease reduction is addressed in *SARS-CoV-2 Survival in Relation to Temperature and Humidity and Potential for Seasonality*. Experts mentioned how difficult it is to reconcile evidence from experimental studies and natural history: indeed, study designs have been already covered in the book.

SARS-CoV-2 Laboratory Testing – focuses on the interpretation of viral load or antibody tests and the difficulty in obtaining high sensitivities and specificities. The importance of past exposures, signs and symptoms, giving relevance to the clinician when identifying the disease is thus very important. Viral RNA detection, immune response, degree of infectivity, and the need for tests that identify asymptomatic patients are addressed. In fact, a study published after the answer to the consultation, reported the testing of asymptomatic health professionals and indicated the need for rapid expansion of testing through nasal collection[5].

The Effectiveness of Fabric Masks resumes prior chapter on air transmission: the two chapters can be sequentially read. Aspects of mask design and shape are added to the previous topic; self-care in use; fabric types; effect on risk behavior. In fact, in the pandemic, individuals were more prone to learn about individual and collective protection measures[6]. Experts concluded that there has been no scientific investigation regarding the daily use of face fabric masks and that evidence of effectiveness is an indirect one. Larger droplets are more easily contained than smaller ones, but they are precisely those expelled by patients and asymptomatic individuals[7]. Today, there is a recommendation from the WHO on the number of layers and types of suitable fabrics[8].

Viral Shedding and Antibody Response is the final chapter, and it addresses the duration of virus release by stages of infection and signs, symptoms; level and duration of humoral response and resistance; optimal duration of case isolation. On the role of specific antibodies, at a later date, there were important advances in the knowledge: characteristics of the immune response induced by infection, such as high concentrations of tumor necrosis factor and interleukin 6, triggered by vaccines, were identified biomarkers in case of more severe patients[9].

Future research will modify the answers about COVID-19, however, the book is helpful for students, teachers and researchers in the medical, basic sciences and public health areas. Overall, the work is clean and guided by previous research. It shows that answers to scientific questions require defined methods and certain steps to control for confounding factors and other biases. It should be noted that it is not an exhaustive work on medical-biological topics related to the disease. In addition, the pandemic is not only the result of biological factors, but is intertwined in local, cultural, and socioeconomic contexts, which must always be considered in formulating public policies: such aspects were not addressed in the book. Despite its importance, susceptibility, immunity, chances of reinfection, transmission by asymptomatic or pre-symptomatic patients have been little explored and research responses and investments are still lacking.

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