

## Prevention related to the occupational exposure of health professionals workers in the COVID-19 scenario

*Prevenção relacionada à exposição ocupacional do profissional de saúde no cenário de COVID-19*

*Prevención relacionada cone la exposición ocupacional de profesionales de la salud en el escenario COVID-19*

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### ABSTRACT

**Objective:** to describe the main recommended actions on prevention actions related to occupational exposure of health professionals working at COVID-19, available until March 2020. **Content:** The current pandemic disease caused by the new SARS-CoV-2 coronavirus has its transmission favored by close and unprotected contact with secretions or excretions from infected patients, mainly through salivary droplets. Organizational prevention practices should be prioritized, since patient's arrival at the health service, optimizing the flow of care, the first care and during health care actions, to minimize occupational exposure to the biological agent. Health professionals classified as a risk group should be removed from activities at risk of contamination. Those contaminated or adulterated must remain in quarantine to minimize the spread of COVID-19. **Final considerations:** care to avoid contamination of workers in this pandemic by the new coronavirus must be prioritized, prevented from affecting the assistance to the population that seeks assistance in health services.

**Descriptors:** Epidemics; public health; occupational health; occupational risks; containment of biohazards.

### RESUMO

**Objetivo:** descrever as principais recomendações sobre ações de prevenção de contágio relacionadas à exposição ocupacional dos profissionais de saúde atuantes frente à COVID-19, disponíveis até março de 2020. **Conteúdo:** A atual pandemia da doença causada pelo novo coronavírus SARS-CoV-2 tem transmissão favorecida pelo contato próximo e desprotegido com secreções ou excreções de pacientes infectados, principalmente por meio de gotículas salivares. Práticas organizacionais de prevenção devem ser previstas antes da chegada do paciente ao serviço de saúde, reduzindo o fluxo de atendimento, no primeiro atendimento e durante as ações assistenciais, para minimizar a exposição ocupacional ao agente biológico. Profissionais de saúde classificados como grupo de risco devem ser afastados de atividades de risco de contaminação. Aqueles contaminados ou adoecidos devem permanecer em quarentena para minimizar a propagação da COVID-19. **Considerações finais:** os cuidados para prevenção de contaminação de trabalhadores nesta pandemia pelo novo coronavírus devem ser priorizados, evitando impactos negativos na assistência à população que busca atendimento nos serviços de saúde.

**Descritores:** Epidemia; saúde pública; saúde do trabalhador, riscos ocupacionais; contenção de riscos biológicos.

### RESUMEN

**Objetivo:** describir las principales acciones recomendadas sobre acciones de prevención relacionadas con la exposición ocupacional de los profesionales de la salud que trabajan en COVID-19, disponible hasta marzo de 2020. **Contenido:** La enfermedad pandémica actual causada por el nuevo coronavirus SARS-CoV-2 tiene su transmisión favorecida por contacto cercano y sin protección con secreciones o excreciones de pacientes infectados, principalmente a través de gotas salivales. Se deben priorizar las prácticas de prevención organizacional, desde la llegada del paciente al servicio de salud, optimizando el flujo de atención, la primera atención y durante las acciones de atención de salud, para minimizar la exposición ocupacional al agente biológico. Los profesionales de la salud clasificados como grupo de riesgo deben ser retirados de las actividades en riesgo de contaminación. Las personas contaminadas o adulteradas deben permanecer en cuarentena para minimizar la propagación de COVID-19. **Consideraciones finales:** se debe priorizar la atención para evitar la contaminación de los trabajadores en esta pandemia por el nuevo coronavirus, evitando que afecte la asistencia a la población que busca asistencia en los servicios de salud.

**Descriptores:** Epidemia; salud pública; salud labora; riesgos laborales; contención de riesgos biológicos.

## INTRODUCTION

On March 11<sup>th</sup>, 2020, the World Health Organization (WHO) characterized the worldwide outbreak of the disease caused by the new SARS-CoV-2 coronavirus named COVID-19 as pandemic<sup>1,2</sup>, which led the health services to a new scenario of health and safety actions aimed at the various professionals involved in the care of the population.

This reality, already experienced in several countries in hospital and community outbreaks<sup>3</sup>, brings social and professional concern for the need to reassess the protocols for preventing COVID-19 among workers exposed to the virus during their work activities.

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Considering the global emergence of the theme and its local repercussion, this article aims to describe the main recommendations on contagion prevention actions related to the occupational exposure of health professionals working with COVID-19, available until March 2020.

### **SARS-COV-2 VIRUS AND COVID-19**

The SARS-CoV-2 virus belongs to the 125nm SARS-like corona virus species and is slightly larger than the influenza, SARS and MERS viruses. This new coronavirus shares 79.5% of the genetic sequence with SARS-CoV and 96.2% of homology with a bat coronavirus, suggestive of the Rhinolphus virus, indicating a probable offspring<sup>2,4-6</sup>.

Transmission is favored by close and unprotected contact with secretions or excretions from an infected patient, mainly through salivary droplets. Other body fluids are not clearly involved in the transmission of the new coronavirus, but it is considered that unprotected contact with blood, feces, vomiting and urine may put the professional at risk of illness<sup>6,7</sup>.

The mean incubation period is 5.2 days, but with reports of it lasting up to 14 days<sup>6,8</sup>. Most cases of COVID-19 have mild clinical symptoms, with fever and dry cough, and myalgia, headache; sore throat and diarrhea have also been reported<sup>6,9</sup>. More severe cases evolve to respiratory distress syndrome and care needs in intensive care units<sup>10</sup>. It is a virus with a greater spread power than others of the same species, with reports that each patient can infect two to three other individuals<sup>11,12</sup>.

Regarding its lethality, a study carried out in China states that the severity of the disease is associated with older age (especially above 80 years old) and with the presence of associated morbidities, such as chronic respiratory disorders, cardiovascular diseases, diabetes mellitus, and oncological conditions. COVID-19-related mortality results from a clinical picture with respiratory failure and/or septic shock and/or multiple organ failure<sup>4,13</sup>.

The impacts in terms of public health in the face of a virus that is easy and quick to spread in the population are serious, which leads to an abrupt change in the routines of the health services, observing a scenario of intensification of hospital admissions for respiratory complications.

The overcrowding of health units, and the lack of beds for hospitalization and equipment for care, such as mechanical respirators, are problems in the organization of work that impact the health of care teams in a pandemic situation<sup>14-16</sup>. In addition to these issues, it is urgent to call attention to failures in the protection of workers, which have been the reality observed in several countries<sup>14,16,17</sup>. Given this scenario, the contamination and illness of the professionals involved in patient care is a reality, as observed in China, where 3,387 cases of health workers affected by COVID-19 have already been registered, leading to 22 deaths<sup>17</sup>.

One of the WHO's non-pharmacological guidelines is social distance, that is, that people stay at home as a way to significantly reduce community transmission of the new SARS-CoV-2 coronavirus. However, this recommendation does not cover essential activities for society, such as the one performed by the health professionals. The presence of these workers in their work environments is necessary to guarantee essential care related to various health problems, such as COVID-19, but it can lead to an increase in unhealthiness due to the high probability of work-related contamination in this new risk condition.

Thus, it is essential to ensure the protection of the health professionals against the virus in order to ensure that they do not act as transmission vectors<sup>18</sup>, in addition to preventing their own illness, which can preserve the maintenance of care for the needy population.

### **Prevention related to the occupational exposure of health professionals to COVID-19**

In the context of the COVID-19 pandemic, but also considering other infectious diseases, the implementation of occupational contamination prevention and control measures is extremely important in the health services, especially due to the need for individual protection of the professionals who may be infected<sup>19</sup>.

Dealing with a large-scale pandemic also requires a robust hospital structure that enables quick and adequate decision-making for the control and spread of the virus, in addition to a network integrated with the Public Health systems which allows better coping by the professionals involved in the new health reality<sup>14</sup>.

In China, it is reported that the contamination of workers was favored by inadequate protection at the beginning of the epidemic, justified by the lack of knowledge about the pathogen agent. Subsequently, the frequent and prolonged exposure to potentially infected patients, the intensification of the workday and the greater complexity of the work tasks, with a reduction in breaks and rest, indirectly increased the probability of infection in the health professionals by compromising the

care provided with their own protection. Finally, the shortage of Personal Protective Equipment (PPE) was also referred to as a reality in the Chinese scenario of a direct increase in the risk of contamination by the new coronavirus<sup>17</sup>.

In the chain of actions to protect the workers, the barrier to prolonged risk contact with infected patients is a fundamental method of safety at work<sup>7,20</sup>. However, in the case of COVID-19, the effectiveness of the PPE is related to the provision of equipment with sufficient protection for SARS-CoV-2 and to the adequate training of teams of workers for its correct and consistent use<sup>20</sup>.

It is known that, during the fight against the disease, there is a need for a logistical and adequate capacity to deliver PPEs to the health services. To achieve an adequate response, health care professionals need to be previously prepared, equipped, and informed about the measures to control the spread of the infection that causes COVID-19<sup>2</sup>.

To reduce the transmission of the pathogen agent in the health services, preventive practices must be provided even before the patient's arrival at the unit, such as rescheduling elective appointments or conducting interviews and prior guidance on their symptoms. If a previous contact is not possible, and there is a search for assistance, that is, without reducing the flow, pre-screening actions must be valued.

The restriction of entry doors, limiting the type of care in the unit, the provision of a mask with rapid isolation of suspected cases, reducing contact with other patients and professionals, providing instructions on hygiene and respiratory etiquette in visible places, and monitoring new signs/symptoms among the patients<sup>21</sup>. That is, it is necessary to ensure the correct screening of COVID-19 cases for early recognition and control of the source, in order to isolate patients under suspicion of infection and to apply the recommended precautions. Alternative measures are recommended to avoid community transmission, such as home visits for guidance, active search and follow-up of mild cases, installation of exclusive health services in auxiliary units, and cancellation of elective or non-urgent care for groups<sup>20</sup>. Reducing community transmission can lead to a reduction in contaminated individuals seeking health services, consequently decreasing the probability of exposure of the workers allocated to these units.

Usually, during care, the standard precautions must be applied to all the patients. Precautionary measures for contact, droplets, and aerosols must be adopted in the treatment of the suspected cases, in addition to other administrative, environmental, and engineering controls<sup>20,22,23</sup>. Such measures must also be observed even after the patient leaves the health unit.

In its technical note No. 04/2020, updated on March 21<sup>st</sup>, 2020, the National Health Surveillance Agency (*Agência Nacional de Vigilância Sanitária*, ANVISA) provides guidance to health services on prevention and control measures that must be adopted during assistance to the suspected or confirmed cases of infection with the new coronavirus<sup>12</sup>. These guidelines are updated as more information is discovered about the new coronavirus. This standard recommends that organizational policies and practices minimize the exposure of the health professionals to SARS-CoV-2 in pre-hospital care and within the health services. It recommends hand hygiene with water and liquid soap or with a 70% alcoholic preparation, as well as the use of goggles or face shield, surgical mask, waterproof apron, and procedure gloves. The use of a N95 or FFP2 cap and mask is indicated during the performance of aerosol-generating procedures, such as intubation or tracheal aspiration, invasive and non-invasive mechanical ventilation, cardiopulmonary resuscitation, manual ventilation before intubation and collection of nasotracheal samples. As for the hospital support teams that are not directly involved in patient care, hand hygiene, goggles or facial protection, the use of a surgical mask, waterproof apron, and procedure gloves are recommended<sup>15</sup>.

With the progression of the pandemic, access to the PPEs for the health professionals has become a concern, due to the possibility of scarcity in places with high demand for care. In a scenario like this, the supply to the health teams must be prioritized and imposes the rational use of consumables to avoid the technical impossibility of providing care to patients with viremia, due to the imminent risk of damage to the worker's health due to contamination resulting from unprotected exposure<sup>24</sup>.

The Brazilian labor legislation, through the Regulatory Rule for Safety and Health at Work in Health Services (NR32), indicates the obligation of the employer to provide the worker with PPE in sufficient quantity, disposable or not, that is necessary for the safe development of the work tasks. In addition to the supply, training must be ensured on a continuous basis, and the protection of workers guaranteed whenever there is a change in the conditions of exposure to biological agents<sup>24,25</sup>.

It is noteworthy that the WHO recommends the removal of activities that involve risk of contact with the new coronavirus, justifying the relocation to risk-free environments for the health professionals belonging to risk groups, such as being over 60 years old, diagnosed with immuno-suppression or chronic diseases that lead to a predisposition

for a worse response to COVID-19, and also pregnant women, since serious diseases resulting from contact with other viruses belonging to the same family of the new coronavirus are reported, in addition to the fact that there is still scarce information on the impact of this disease on the obstetric condition<sup>26,27</sup>.

### Monitoring of the health professionals exposed to COVID-19

There is a need for the health services to have mechanisms and routines that promptly alert their teams about suspected or confirmed cases of infections by the new coronavirus so that risk contact for the disease is minimized, thus avoiding unwanted consequences. Such actions must be promoted in a joint activity between the health care-related infection control nucleus, those responsible for health and safety at work, health service managers, and teams of professionals who work in direct contact with patients<sup>7</sup>.

The number of sick health professionals has increased during the pandemic<sup>27</sup>. Therefore, self-monitoring should be a regular orientation for all those exposed to risk, seeking to observe the occurrence of fever or respiratory symptoms (dry cough, sore throat, and shortness of breath) that can be a warning sign regarding COVID-19<sup>7,28</sup>.

Health service managers must have an action plan to be developed after confirming the illness in their professionals, establishing a flow of conducts. Work restriction is essential to prevent potential transmission to patients and/or coworkers and to maintain a quarantine of 14 days after the last day of exposure to a patient with a confirmed diagnosis of COVID-19<sup>7</sup>.

It is important to graduate exposure, considering a contact of low risk or high risk. The first stems from a history of contact with patients with COVID-19 who used a face mask to control the source while the professional also used a face mask and eye protection. The second is characterized when there is exposure to the patient infected by the new coronavirus without any protection by individual equipment. This characterization of the exposure aims to define the priority in taking corrective actions, as there are specific recommendations for each situation<sup>7,29</sup>. In high-risk cases, the WHO recommends that professionals interrupt their care work, remain in quarantine for a period of 14 days after the last day of exposure to a patient confirmed with COVID-19, and be tested for infection<sup>29</sup>.

COVID-19 is subject to immediate compulsory notification by the public and private services, and suspected and/or confirmed cases must be recorded in the official system of the Ministry of Health<sup>30</sup>. The development of COVID-19 due to exposure to the virus while working in health services in the private sector justifies social security and labor notification through the Work Accident Communication (*Comunicação de Acidente de Trabalho*, CAT)<sup>31</sup>. As for the public servants, it is necessary to observe the laws that govern the professional relationship.

### FINAL CONSIDERATIONS

Considering the need to keep the maximum number of professionals active in order to reduce the negative impacts of this pandemic situation on society, the care measures for health promotion and disease prevention among the workers of the health sector must be prioritized. The guarantee of access to personal protective equipment in sufficient numbers and with recognized effectiveness are essential elements highlighted by the main centers of studies and regulation in health, both in Brazil and in the world. The recommendations include the training of workers in the correct use of barriers to exposure and adjustments in the organization of the operational flows of the services.

Finally, as COVID-19 was recently discovered and still requires studies to clarify its impacts, the recommendations and protocols can be modified over time and must be the reason for frequent technical updating by the researchers, managers, and health professionals.

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