

# UP Against the Infection: Methods of Controlling the Spread of COVID-19

<sup>1</sup>Elita B. Bagazieva, <sup>2</sup>Maryana A. Kazharova, <sup>3</sup>Ayshat U. Sadulaeva, <sup>4</sup>Darya S. Romashkina, <sup>5</sup>Anastasia V. Zheleztsova, <sup>6</sup>Yuri N. Dorofeev

<sup>1</sup>Astrakhan State Medical University, Bakinskaya 121, 414000

<sup>2,3</sup>Kabardino-Balkarian Republic, Nalchik, Chernyshevskogo str., 173, Russia, 360004

<sup>4,5</sup>Kursk State Medical University, Russia, Kursk, K. Marksa 3, 305041

<sup>6</sup>Tyumen State Medical University, Tyumen, Russian Federation

## ABSTRACT

The world's population is facing an unprecedented problem that has not been faced since the Spanish influenza after the First World War. COVID-19, which was initially considered as another epidemic of SARS, has reached global proportions. The rapid spread of this new virus has put a serious strain on the healthcare system and its capabilities, as insufficient understanding of the mutating virus prevents effective measures from being taken as soon as possible. A sudden outbreak causes insufficient supply in terms of labor, raw materials, resources, productivity and disruptions in the supply chain as well as logistics to meet the growing demand. In order to suppress the outbreak, a number of protective measures are being introduced.

COVID-19 has already led to behavioral and structural changes, including economic, environmental and energy sustainability. In this regard, the fight against the spread of coronavirus infection and the development of measures to suppress it becomes the central task of all progressive humanity.

The purpose of the work is to investigate existing and proposed directions and methods of controlling COVID-19.

Corresponding Author e-mail: mmBeryua887@ya.ru

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## INTRODUCTION

The COVID-19 pandemic causes global disruptions in the life of society and health systems.<sup>[1,2]</sup> COVID-19 disease causes a wide range of respiratory symptoms, from symptoms similar to the common cold to more severe diseases such as pneumonia, and its main transmission channel is airborne spread.<sup>[3]</sup>

In order to control coronavirus infection, a number of countries have introduced quarantine measures, but their effectiveness has been insufficient. Moreover, restrictions in the work of a number of enterprises led to the fact that they were on the verge of bankruptcy. In this regard, most countries were forced to abdicate the blockages, and therefore almost all companies in the world started working.<sup>[4]</sup>

However, the risk of infection has been and remains very high, and therefore the adoption of measures to control coronavirus infection at enterprises of various industries continues to be the most relevant area of work of the management of companies and specialists of safety services.

Occupational health methods based on hazard classification, determination of requirements for controlled exposure of employees and risk management were originally developed in the pharmaceutical industry.

On the other hand, the number of deaths due to complications caused by severe acute respiratory syndrome caused by coronavirus 2 (SARS-COV-2) is extremely high and continues to grow with the emergence of new waves of infection and the spread of mutant variants of this virus. Thus, it is indisputable that this pandemic is global in nature and has an impact on society and the economy.<sup>[5]</sup>

The rapid spread of the new coronavirus makes a fuss, concern and anxiety of company employees about the risks of infection in the course of their activities. To ensure the physical and psychological protection of their employees, health managers should implement strategies to take care of those who are at the forefront of the fight against the pandemic.<sup>[6]</sup> Ultimately, these health workers are at the first who control the fight against the pandemic. However, it is always important to emphasize that other

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professionals also perform activities considered important and, therefore, are also equally exposed to the virus in the workplace.

World Health Organization (WHO) has been publishing reports on the fight against COVID-19 since the beginning of the pandemic. In the face of this whole scenario, while the guidelines of the technical bodies of the authorities are updated as scientific research is published, companies are faced with the task of instructing their occupational health and safety (OH&S) departments to develop safer ways of working to reduce the risk of infection.<sup>[7]</sup>

## MATERIALS AND METHODS

As part of the writing of the work, the approaches to the organization of controlling the spread of infection proposed by various researchers were studied. In the process of generalizing the material, comparative and analytical research methods were applied.

## RESULTS

Since the beginning of the new coronavirus pandemic, a number of official recommendations have been published to reduce the risks of infection and spread. Five practices to combat COVID-19, established by the World Health Organization and widely used in the literature, have found application.<sup>[8]</sup>

The first practice of controlling COVID-19, considered in this work, concerned the supply of water and soap (COV1), as well as proper access to hand washing devices at work with a neutral detergent, as well as the use of hospital disinfectants active against the virus, 0.1% sodium hypochlorite solution or 70% ethanol solution. In addition, COV 1 evaluates the availability of personal protective equipment, their mandatory use, and also regulates the use of thermometers for measuring body temperature, which allows early detection of fever from a safe distance.<sup>[9]</sup>

Organizing workplaces in such a way that the physical distance between employees and customers (COV2) is maintained is an important practice to control COVID-19. This includes, for example, the establishment of a planning policy, the maximum number of people in a common space, designated and fixed places, that is, changes in work routines that reduce the risk of infection among colleagues (especially among those who work closely). The best option would be to change the design of workplaces to avoid crowding and provide physical distance, mainly to ensure that customers and employees socially distance themselves while eating or drinking, including with planning and pre-defined duration of meals in canteens.<sup>[10]</sup>

In addition, an effective measure is to encourage remote work of staff and participation in meetings in a virtual format. However, some low-income communities rely mainly on social distance to control COVID-19 due to lack of resources, and therefore it is always recommended to extrapolate a minimum distance of one meter. The third practice of controlling COVID-19, considered in this paper, concerned the distribution of labor during the day (COV3), ways to reduce the duration of shifts or open new hours to reorganize the number of jobs. An example is the recommendation that retail employees

responsible for replenishing the shelves of establishments should do their main work when the stores are closed to the public. This reduced their contacts with other employees and reduced the level of infection.

Cleaning and disinfection of workplaces and common areas (COV4) is the practice of controlling the current COVID-19, including by maintaining regular cleaning and disinfection of surfaces, equipment and other elements of workplaces, including prioritization of identified places with the highest risk of infection. The direct result is a well-ventilated environment with fresh air.

On the other hand, caution should be exercised in case of excessive or inadequate disinfection and risks to human health, such as the spraying process or the use of disinfectants based on quaternary ammonium.<sup>[11]</sup>

The fifth and last practice of controlling COVID-19, considered in this paper, concerned the provision of masks FFP2, N95 as well as prompt assistance in positive cases of the disease (COV5). This aspect also considers transporting employees with symptoms to inpatient treatment centers in addition to monitoring asymptomatic cases and immediate communication with health authorities. In addition, both employees and customers should be provided with personal protective equipment, such as masks and face shields, as well as proper training in their use, depending on the type of enterprise.<sup>[12]</sup> An example of this is the availability of N95 type masks for specialists who need to contact people infected with the new coronavirus. Table 1 provides information summarizing the methods of controlling COVID-19 regulated by WHO.

Despite the fact that the literature on this issue is rapidly being updated, WHO collects and distributes important information to companies in all fields of activity, paying special attention to methods against COVID-19.

## DISCUSSION

In order to provide a safer working environment for employees, in addition to guiding companies on the actions that need to be taken to prevent infection and reduce the risks of COVID-19, various regulatory authorities have developed a number of recommendations. Consider these recommendations with the application of US occupational safety legislation, in

**Table 1:** Methods of controlling COVID-19, regulated by WHO

Code	The practice of controlling COVID-19 according to WHO
COV1	Provide your employees with resources against COVID-19, such as hand hygiene using water and soap or 70% alcohol; self-assessment of symptoms; body temperature measurement; personal protective equipment in the form of surgical masks.
COV2	Organize the workplace so that a safe distance (1.5 m) is maintained between employees, taking into account the instructions of the Ministry of Health and the specifics of the working environment.
COV3	Prioritize measures for the distribution of labor during the day, avoiding concentrating it only on one shift.
COV4	Disinfect workplaces and common areas between shifts or whenever another person is assigned to an employee.
COV5	Provide emergency care to persons with a suspected or confirmed diagnosis of COVID-19, taking into account the use of respirators or masks PFF2 or N95.

particular, the Occupational Safety and Health Act (OSHA), since it combines measures widely used by private and public companies since 1970, the year of its creation in the United States.<sup>[13]</sup>

It is worth mentioning that actions that improve the work of companies and have a direct connection with the safety of employees have also been investigated. Thus, on-the-job training (S1) on the importance of personal protective equipment and OH&S with an emphasis on practical work is the foundation for taking control of COVID-19. In addition, safe training protocols, including those aimed at increasing workers' resistance to infection, should be promoted.

During a pandemic, online learning is more effective and safer, but in face-to-face training, it is important to test knowledge. In addition, new technologies, such as artificial intelligence, cooperate to disseminate relevant information. At the moment, it is worth emphasizing the problem of companies facing this lack of internal experience to conduct special training to combat the pandemic of the new coronavirus, and in this sense, small and medium-sized companies logically suffer more. This problem is also the fact that outsourcing employees with fixed-term contracts have worse working conditions and fewer training opportunities. On the other hand, in countries affected by pandemics of other respiratory diseases, for example, in some Eastern countries, guidelines and a culture of periodic training regarding team safety have been updated.<sup>[14]</sup>

Similarly, the provision of personal protective equipment (PPE) (S2) as an anti-infective measure, for example, to protect the respiratory tract with masks N95 and FFP2, in addition to gloves and disposable aprons, to meet the need for additional protective barriers for employees and customers.

On the other hand, it is not enough to standardize PPE with better protection. It is also necessary to invest in on-the-job training so that everyone knows about proper use, increases the sense of security and, therefore, reduces the risk of infection.

Just as it is necessary to consider the correct use of PPE in accordance with the exposure of employees to risks in each workplace, it is important to note that informal workers and those with less purchasing power have less access to health equipment and adequate personal protection and, given the growing concern about the pandemic, has led to a shortage of personal protective equipment.

The implementation and maintenance of the Risk Management Program (S3) establishes safe infection risk management procedures by assisting companies in assessing workplace risk levels, prioritizing adequacy, and making necessary improvements. The employer must implement a safety management program aimed at eliminating risks.

However, government agencies are still trying to cope with the risks associated with exposure to and infection with SARS-CoV-2. This is due to the fact that there is no Emergency Temporary Standard (ETS) that requires each employer to develop and implement an infection control plan.

In addition, part of the occupational health and safety program is the availability and dissemination of safety indicators among all employees (S4), promotion of reducing the number of accidents at work and injury prevention for all categories of employees, cooperation in order to reduce organizational risks. In addition to these factors, monitoring indicators such as occupancy rates reduces the risk of infection. In any case, the development of indicators should be evaluated by standardized circumstances.

The organization of workplaces taking into account safety attributes (S5) reduces the risk of transmission of a new coronavirus due to simple structural changes in the workplace. On the other hand, the growing density of offices and the incentive to share workplaces increase the risk of infection among employees. Therefore, it is important to plan in such a way that all necessary changes are carried out in a satisfactory manner.<sup>[15]</sup>

Actions that increase employee safety in modern companies are presented in Table 2.

On the other hand, no studies have been found in the literature that would consider the relationship between the methods of controlling COVID-19 indicated by WHO, which led to an improvement in indicators related to employee safety.

The analysis of actions related to the improvement of occupational health indicators of employees of companies has shown that the identification, monitoring and reduction of biological risks in the workplace (H1) are extremely relevant practices, especially if they are accompanied by already established risk assessment procedures, established to analyze whether the prevention and protection measures already taken adequately control the transmission of the new coronavirus. The implementation of these procedures proved to be a problem for some companies that did not consider this type of risk assessment. However, getting back to work during a pandemic depends on the implementation of biological cycle management. In this sense, it is worth emphasizing the importance of conducting training on combating biological agents.

In addition, the periodic planning and application of the Occupational Health and Safety Control Program (H2) allows companies to implement a number of preventive measures to reduce the impact on workers of the new coronavirus. Government agencies are responsible for determining obligations and conducting audits, and companies are responsible for providing benefits, such as health insurance, to their employees. In addition, special measures should be applied to employees over the age of 60 due to the increased risk of developing a more serious version of COVID-19.

**Table 2:** Actions that increase employee safety

<i>Actions that have a positive impact on employee safety indicators</i>	
<i>Nº</i>	
1	Conduct on-the-job training
2	Provision, control and verification of the use of PPE (personal protective equipment)
3	Implement and maintain (Risk Management Program)
4	Maintain and disseminate safety indicators to all employees
5	Secure workplace organization

**Table 3:** Actions that improve occupational health

No	Actions that have a positive impact on occupational health indicators
1	Identification, monitoring and reduction of biological risks in the workplace
2	Plan and implement the OHMCP (Occupational Health Medical Control Program) in a preventive and periodic/emergency manner
3	To have a minimum number and criteria for washbasins, toilets and changing rooms.
4	Monitor the abscess rate and treat the peaks individually to identify problems in the processes.
5	Ownership and maintenance of Social Epidemiological Technical Communication to link accidents and diseases with professional functions

The analysis and compliance of washbasins, toilets and changing rooms with the minimum criteria (H3) should also take into account a sufficient number of bathrooms, depending on the number of people. If necessary, social isolation should be observed in places such as locker rooms. In general, to contain the risk of infection, it may be necessary to improve the infrastructure of these workplaces.<sup>[16]</sup>

Monitoring the peaks of the absenteeism index separately is another activity that helps to identify problems in processes affecting the health of employees (H4), and thereby allows one to measure the effectiveness of surveillance mechanisms adopted to combat the pandemic. Similarly, the reorganization of offices has led to a decrease in absenteeism rates. It is noteworthy that employees who are on sick leave stay at home with financial security, while protecting the health of their colleagues.<sup>[17]</sup>

In addition, the availability and maintenance of technical epidemiological communication in the field of social security helps companies to link employee leave due to COVID-19 with professional functions (H5). The analysis of epidemiological data allows the company to make sure that the containment measures were effective. Similarly, extensive and periodic screening tests for COVID-19, together with the development and improvement of these tests, improves disease tracking in the company and provides a safer working environment.

Attributes such as the likelihood of the virus spreading may take into account vaccinated or already infected employees and their reduced likelihood of infection. On the other hand, it makes no sense to have a technical and epidemiological connection in the social security system if the employees are immigrants who pay taxes but do not participate in the social security system [18]. The actions described in the literature that led to the improvement of occupational health indicators are presented in Table 3.

However, studies have also been identified that examined the relationship between COVID-19 control methods specified by the World Health Organization, which have led to improvements in indicators related to employee occupational health. Thus, it can be said that the introduction of COVID-19 control methods in the production system has improved the indicators related to employee labor protection.

**Conclusion.** The pandemic is here for a long time -it leaves no doubt. Accordingly, it is necessary to adapt to the current

situation and organize people's daily life so that its quality is as high as possible. It is especially important to implement a number of measures for the organization of safe working conditions, in connection with which an important aspect is the development and implementation of measures to protect employees from the spread of the virus. Our future is only in our hands, and if today we do not take appropriate measures to combat the coronavirus or collective immunity is not achieved, the number of deaths in the world will only increase, and our future and the future of our children will be under serious threat.

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