Project code	EpidProtect-21
Study title	Exhaustive, cross-sectional, non-interventional, multicenter retrospective epidemiological study of the COVID-2019 incidence and prevention methods of SARS, including COVID-2019, among staff of participating organizations.
Version of Synopsis	0.2, 15.02.2021.
Justification of study	Coronaviruses are a large family of viruses that might cause illness in animals or humans. SARS-CoV-2 is an enveloped, single-stranded RNA virus of the β genus. It can cause respiratory illness named COVID-19, the severity of which varies from asymptomatic to severe, and which can lead to the patient's death of the long-term consequences (so-called post-COVID syndrome). The virus has spread globally and been declared a Public Health Emergency of International Concern by WHO in January 30, 2020. The first case of COVID-19 in Ukraine was detected in early March, 2020. 1273475 cases of the disease have been registered in Ukraine as at February 15, 2021. Quarantine restrictions and other anti-epidemic measures established in Ukraine and their results are the subject of wide debate. Own anti-epidemic measures, in addition to those established by the Government, have also been implemented by numerous representatives of the public sector, non-governmental organizations and business. The company management of the participating organizations decided to provide their staff with prophylactic tools and recommendations for COVID-19 prevention. The study aims to identify the incidence, characteristics of cases and their relationship with the preventive measures used.
Study design	Exhaustive, cross-sectional, non-interventional, multicenter retrospective epidemiological study, case study.
Number of subjects	3443 subjects.

Location of study conduct	Each subject will participate in the study in the participating organization by which the subject is employed: • SI National Institute of Phthisiology and Pulmonology named after F.G. Yanovsky. • Yuria-Pharm LLC. • Infuzia PJSC. • Institute Hyalual LLC. • Medical Center M.T.K. LLC. • InterChem SLC. • Diatom LLC. For the study the following facilities will be organized at each participating organization: • Specially designated locations for material collection and conduction of rapid ELISA tests for the antibodies to COVID-2019. • Specially designated computerized places for questionnaires with assigned staff who organize the order and accuracy of the questionnaire conduct.
Duration of data collection	3 months.
Purpose of the study	To determine the relationship between the systematic use of prophylactics to prevent SARS, including COVID-2019, and the risks of incidence and serious complications of COVID-2019 among staff of participating organizations.
Study objectives	• To investigate the incidence of COVID-2019 cases in participating organizations. • To investigate the severity of the COVID-2019 cases in participating organizations. • To explore the prevention methods used by staff members. • To determine the relationship between the used prevention methods and incidence of COVID-2019 among staff of participating organizations.

	• To determine the relationship between the presence of comorbidities, such as bronchial asthma and COPD, and the incidence/severity of COVID-2019. • To determine the relationship between the COVID-2019 case and the course of comorbidities, such as bronchial asthma and chronic obstructive pulmonary disease (COPD). • To identify the relationship between different strategies and combinations of drugs used for prophylactics at any time from March 2020 and the risk of having a COVID-2019 case. • To identify the relationship between different strategies and combinations of drugs used for prophylactics at any time from March 2020 and the risk of having a severe COVID-2019 case. • To identify the relationship between different strategies and combinations of drugs used for prophylactics at any time from March 2020 and the risk of hospitalization of persons who had at least one COVID-2019 case.
Methodology	Each subject will be assigned an individual number, which will be used for conduction of a rapid ELISA test for the antibodies to COVID-2019. Subjects will be notified of the test results. The questionnaires will be conducted when the subject enters the data in the electronic case report form after signing the consent to processing of personal data. For the purposes of analysis, the subject enters his individual number in the questionnaire, as well as number of a rapid ELISA test for antibodies to COVID-2019 and its result. The entered data will be compared with the databases which contain the results of rapid ELISA tests. The questionnaire includes questions related to the main risks and protective factors of the COVID-2019 disease: demographic, anthropometric data, lifestyle data, prophylactics methods, subject's costs spent on COVID-2019 prophylactics.

	For subjects who had the COVID-2019 case, a separate block of questionnaire was created to collect data on prophylactics, treatment of COVID-2019 case, the course of the disease and the consequences of the disease case, as well as costs spent on COVID-2019 treatment. The completeness of entered data in the electronic case report form will be controlled by specially designated authorized persons in each participating organization, who were designated by the person responsible for conducting the study in each participating organization. The correctness of data entered in the electronic case report form will be controlled by remote monitoring. The questionnaire cannot be completed until all required fields of the case report form have been completed. A structured description of the available medical documentation for fatal cases of COVID-2019 will be conducted separately. Demographic, anthropometric data, lifestyle data, prophylactics methods, treatment of COVID-2019, the course of the COVID-2019 case will be described.
Duration of each subject's participation in the study	1,5-2 hours.
Visit schedule	Visit 1. Conducting of a rapid ELISA test. Visit 2. Online questionnaires among staff of participating organizations.
Study endpoints	• The incidence of COVID-2019 cases in participating organizations. • The severity of the COVID-2019 cases in participating organizations. • Prevention methods of SARS, including COVID-2019, which were used by subject who had at least one COVID-2019 case.

	• Prevention methods of SARS, including COVID-2019, which were used by subject who did not have any COVID-2019 case. • Relationship between the used prevention methods and incidence of COVID-2019 among staff of participating organizations. • Relationship between the presence of comorbidities, such as bronchial asthma and COPD, and the incidence/severity of COVID-2019 case. • Relationship between the COVID-2019 case and the course of comorbidities, such as bronchial asthma and chronic obstructive pulmonary disease (COPD). • Relationship between different strategies and combinations of drugs used for prophylactics at any time from March 2020 and the risk of having a COVID-2019 case. • Relationship between different strategies and combinations of drugs used for prophylactics at any time from March 2020 and the risk of having a severe COVID-2019 case. • Relationship between different strategies and combinations of drugs used for prophylactics at any time from March 2020 and the risk of hospitalization of subjects who had at least one COVID-2019 case.
Study variables	• Demographic characteristics: age, gender. • Anthropometric characteristics: body weight, height. • Blood group. • Number of people in the household. • Lifestyle: the presence of bad habits, physical activity, diet. • Medical history: comorbidities, their treatment. • Prevention methods of SARS, including COVID-2019, currently used by the subject. • Number of COVID-2019 cases, which subject had. • Characteristics of the disease case, its treatment.

	• Prevention methods of SARS, including COVID-2019, which were used by subject who had at least one COVID-2019 case. • Prevention methods of SARS, including COVID-2019, which were used by subject who did not have any COVID-2019 case. • Amount of costs spent on prevention and treatment of SARS, including COVID-2019. • Relationship between different strategies and combinations of drugs used for prophylactics at any time from March 2020 and the risk of having a COVID-2019 case. • Relationship between different strategies and combinations of drugs used for prophylactics at any time from March 2020 and the risk of having a severe COVID-2019 case. • Relationship between different strategies and combinations of drugs used for prophylactics at any time from March 2020 and the risk of hospitalization of subjects who had at least one COVID-2019 case.
Inclusion criteria	Subjects who meet all the inclusion criteria will be included in the study: • The subject gave the consent to participate in the study and signed the consent to processing of personal data. • The subject aged 18 years and older. • The subject is employed by one of the participating organizations.
Exclusion/withdrawal criteria	The nature of the study does not provide for withdrawal criteria. The subject may not be included in the study due to non-compliance with the inclusion criteria or due to force majeure.
Calculation of sample size	Not applicable as it is exhaustive study. Participating organizations undertake to organize the involvement in the study of at least 95% of persons employed by participating organizations.

Study limitations	Persons, who were employed by one of the participating organizations from March 1, 2020, but who do not have employment relations with the participating organizations during the study period or persons who are on maternity leave, will not be included in the study. Another study limitation is duration of data collection (due to long-term data collection there is a difference in the duration of action of the exposure factor). The retrospective study design has limitations on the completeness and accuracy of the data provided by the study subjects. There may be difficulties in filling in the missing data. Certain relationships can be difficult to describe. The direction of the relationship cannot be determined for all relationships (there may be an inverse relationship). Potential data distortion may be due to the subject selection; use of an electronic data collection system; possible low computer literacy of some subjects; lack of data verification and query generation. The completeness and correctness of the description of available medical documentation for fatal cases of COVID-2019 depends on the amount of information provided and its quality. Conclusions from it cannot be extended to other population members.

Statistical analysis plan

In the context of this data analysis, all the main steps from the primary data to the results of the study will be described separately in the Statistical Analysis Plan.

This study is not intended to accept or reject pre-defined hypotheses, thus statistical analysis will mainly be descriptive.

All types of analysis will be done for the entire available study population with available data.

If there is a sufficient amount of data in the subpopulations, a separate statistical analysis will be performed.

No conditional calculation methods will be applied to the missed values.

The statistical generalization will consist of frequency tables of categorical variables (number, %).

For metric variables, descriptive statistics (number of subjects with available observations, number of missed values, mean, standard deviation, median, 25th and 75th percentiles, minimum and maximum) will be presented in tabular form.

Statistical conclusions will be used to assess the potential relationship between the identified variables and the incidence / severity of COVID-2019.

The relationship between the subject's characteristics and the variables of interest will be assessed using a one-dimensional and multidimensional (polynomial) logistic regression model for variables, which have no more than 20% omitted data.

The final model will be selected with a view to minimizing the Akaike information criterion value.

2×2 tables, χ-square were used for calculations of odds ratios.

Rough odds ratios and adjusted odds ratios with corresponding 95% confidence intervals and p-values will be generated and presented for both one-dimensional and multidimensional logistics models.