First Serological Study among Health Care Workers in Spain Reveals Lower-than-expected Prevalence of SARS-CoV-2 Infection

Active or past infection was detected among 11.2% of the Hospital Clinic staff who participated in the study

Barcelona, May 3, 2020- A serological study led by ISGlobal, an institution supported by “la Caixa”, and the Hospital Clínic of Barcelona, reveals that 11.2% of the hospital staff has been infected by the new coronavirus, SARS-CoV-2.

“This is the first study that measures the prevalence of SARS-CoV-2 antibodies in a representative sample of healthcare workers in Spain,” says Alberto García-Basteiro, ISGlobal researcher, medical doctor at the International Health Service of Hospital Clínic, and one of the coordinators of the SEROCOV-1 study.

The real percentage of people infected by SARS-CoV-2 remains one of the great unknowns in this pandemic, since symptoms caused by the infection can range from imperceptible to very severe. “Knowing the prevalence of infection among healthcare workers is particularly important, since this helps estimate – and mitigate – their risk of exposure,” adds García-Basteiro, first author of the study.

The research team measured antibodies against one of the SARS-CoV-2 proteins in blood samples from 578 staff members working at Hospital Clinic. To do so, the team developed its own immune assay using the Luminex technology, which allows for the reliable measurement of different types of antibodies (IgA, IgM and IgG) against different viral antigens at the same time. “The advantage is that we can increase the sensitivity of our Luminex assay by measuring antibodies to other viral antigens, since the appearance of each type of antibody is different and the response may vary between individuals,” explains ISGlobal researcher Gemma Moncunill, first co-author of the study.

In parallel, the authors performed PCR tests using nasopharyngeal swabs to detect active infections.

The results reveal that, of 578 study participants, 14 had an active infection (i.e. they were positive by PCR) at the time of recruitment, 39 had been previously diagnosed by PCR, and 54 had developed antibodies against the virus (signalling recent or past infection). Of these 54 individuals, 21 (39%) had not been diagnosed at the time of infection, and roughly half of these undiagnosed individuals did not develop any COVID-19 symptoms. The total number of participants with evidence of past or current infection (by PCR and/or serology) was 65, or 11.2%.

Antibodies were generally detected after 10 days of symptom onset, and IgA antibodies could be detected slightly sooner than IgM or IgG antibodies.

“Given that healthcare workers are a high-risk group, it is probable that the seroprevalence in the general population is even lower than 11%, still far from the 60% herd immunity threshold we need to reach. In any case, it is still not known whether the presence of antibodies confers protection against possible reinfections,” says Carlota Dobaño, ISGlobal researcher and senior author of the study.
In light of data from a hospital in Madrid, where almost 12% of the staff had tested positive by PCR by the end of March, and a modelling study estimating that up to 15% of the Spanish population could be infected, the **seroprevalence observed in this study is lower than expected**. However, the authors note that this study may not be representative of other hospitals in Spain, since Hospital Clínico implemented early preventive and screening measures.

“The fact that almost 40% of infections went undiagnosed underlines the importance of performing PCR tests for all healthcare workers, regardless of the presence of symptoms, in order to reduce the risk of hospital-acquired infections,” says Alfredo Mayor, ISGlobal researcher and co-senior author of the study.

This study has not been peer-reviewed and was posted as a preprint on the medRxiv server. The SEROCOV-1 study was financed through ISGlobal’s own funds. The institution has launched a [call for donations](mailto:pau.rubio@isglobal.org) to support the 50 coronavirus projects developed by its research teams.

**Reference**

**About ISGlobal**
The Barcelona Institute for Global Health, ISGlobal, is the fruit of an innovative alliance between the “la Caixa” Foundation and academic and government institutions to contribute to the efforts undertaken by the international community to address the challenges in global health. ISGlobal is a consolidated hub of excellence in research that has grown out of work first started in the world of health care by the Hospital Clinic and the Parc de Salut MAR and in the academic sphere by the University of Barcelona and Pompeu Fabra University. The pivotal mechanism of its work model is the transfer of knowledge generated by scientific research to practice, a task undertaken by the institute’s Education and Policy and Global Development departments. ISGlobal has been named a Severo Ochoa Centre of Excellence and is a member of the CERCA programme of the Generalitat de Catalunya.

**About Hospital Clinic**
Hospital Clínico de Barcelona is a public university hospital with a centuries-long history. With 4,500 employees, it is one of the leading healthcare centers in Spain and the first in scientific production. The hospital offers quality care, high-level excellence and competitive biomedical research and a high teaching commitment to train professionals. All of this is included in an excellent balanced management with the aim of offering society a humanized cutting-edge medicine.

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