tion in Spain over the last years and the improvement in some groups' quality of life, such as people with HIV coinfection. Notwithstanding, in recent years, an increase in new HCV infections and reinfections has been observed in men who have sex with men with sexual practices with a high risk of transmission in the context of drug use (Chemsex).

The screening recommendations consider the country burden of infection, the fact that more than 80% of people with active HCV have risk factors for infection, the absence of reliable evidence on the efficacy and cost-effectiveness of population screening, and the fact that screening in the presence of risk factors for HCV is already included in the portfolio of services of the Spanish National Health Service. Based on these pieces of evidence, and in order to optimize the available resources, screening is recommended exclusively for individuals with exposures or situations of risk for the transmission of HCV, such as injected or inhaled drug use, risky sexual relations, co-infection with HIV or HBV, health or esthetic procedures performed without the proper safety precautions, admission to prisons, and origin from countries with a medium or high prevalence of HCV infection. Screening for HCV infection is not recommended in asymptomatic people without exposure or risk situations.

Of note, the guide's coordinators have requested a study of other screening strategies' cost-effectiveness (population screening, screening of birth cohorts) to the Network of Health Technology Assessment Agencies and Benefits of the National Health System. The current recommendations will be reviewed based on the results of this study. Currently, and in light of the data described above, improving access to diagnosis and linkage to the follow-up and treatment of people with HCV infection is key.

The Guide includes other recommendations such as the one-step diagnosis of HCV infection following the recommendation of Clinical Microbiologists, Infectious Diseases specialists, and Hepatologists.[4] Tailoring of care in those more vulnerable is also encouraged. For example, initiatives on multidisciplinary care in centers for people with drug addiction, carrying out the diagnosis and dispensing treatment under the same roof. It is advised to integrate prevention and screening measures for HCV, HBV, HIV, and other sexually transmitted infections in primary care, hospitals, and sexual health clinics. The Guide acknowledges community organizations for their work in prevention and linkage to screening and treatment services.

The authors wish to thank the Editorial Committee of Enfermedades Infecciosas y Microbiología Clínica for the opportunity to present this HCV infection screening guide. We encourage all professionals to read and disseminate it and contribute to eliminating hepatitis C in Spain.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.eimc.2020.12.003.

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Detection of SARS-CoV-2 genomic RNA on surgical masks worn by patients: Proof of concept

Prueba de concepto: detección de material genético de SARS-CoV-2 en mascarillas quirúrgicas de pacientes

Dear Editor,

SARS-CoV-2 is a new pathogen that has emerged in Hubei province, China, on December 2019 and was declared pandemic on March 2020 by the World Health Organization (WHO). Coronaviruses are monopartite, single-strand RNA, positive sense, capped, and virions are enveloped.[1] The persistence of SARS-CoV-2 on surfaces varies considerably based on the type of material. Stability is higher on plastic and stainless steel than on copper and cardboard[2] and its persistence has also been established on high-touch surfaces in laboratories such as phones and keyboards.[3] Nasopharyngeal swab is the recommended sample to detect SARS-CoV-2 but sampling requires trained staff with personal protective equipment, the procedure is uncomfortable for the patients, and may induce sneezing with the consequent risk of aerosol generation. Preliminary studies to detect viral genome on N95 masks have been performed[4] including SARS-CoV-2.[5] In Spain, the use of surgical masks is mandatory in almost all its territory. To our knowledge, there are no studies addressing this issue with surgical masks.

In this report, we show that SARS-CoV-2 RNA can be detected on surgical masks worn by patients for several hours and we propose that this may be an alternative non-invasive method to detect the presence of the virus.

We selected 4 patients that came to the Emergency ward in our tertiary care hospital with a positive nasopharyngeal sample for SARS-CoV-2. All of their clinical and demographic characteristics were recovered by clinical records. To process the masks we cut out an area of approximately 10 cm × 17 cm covering the nostrils and mouth excluding the outer layer in order to avoid possible false

Table 1
Clinical and demographic characteristics of four patients with COVID-19 and their Ct values of nasopharyngeal swabs and surgical masks.

Case	Sex/age (years)	Hospital stay	Symptoms	Nasopharyngeal swab Ct values	Surgical mask Ct values	Time of mask use	Outcome
1	30/M	Non-ICU stay (4 days)	Anosmia, fever	N gene: 26.82 S gene: 27.22 Orf-1AB: 27.67	N gene: 31.99 S gene: 30.88 Orf-1AB: 31.10	11 h of non-continuous use in one and a half days	Survived
2	33/M	Not hospitalized	Arthromyalgias, general bad condition, headaches	N gene: 20.7 S gene: 19.6 Orf-1AB: 18.4	N gene: 27.2 S gene: 24.6 Orf-1AB: 23.7	8 h of non-continuous use in one day	Survived
3	49/M	Non-ICU stay (5 days)	Asthenia, dry coughing, ground-glass opacity, headaches	N gene: 29.44 S gene: 28.80 Orf-1AB: 27.67	N gene: 36.1 S gene: No amplification Orf-1AB: 35.57	More than 6 h of continuous use	Survived
4	30/M	Non-ICU stay (4 days)	Anosmia, asthenia, headaches	N gene: 26.82 S gene: 27.22 Orf-1AB: 27.67	N gene: 32.9 S gene: 33.7 Orf-1AB: 31.5	More than 6 h of continuous use	Survived

positive results due to external contamination. To inactivate viral particles we used guanidine isothiocyanate; approximately 3 mL to cover the mask sample, then, vortexed for a minute and finally we performed RNA extraction and the PCR following the same protocol used routinely in our laboratory for respiratory samples. For the extraction we use the MagMAX Express 96, Magnetic Particle Processor (Applied Biosystems) following the manufacturer recommendations. All samples were tested using the TaqMan 2019 nCoV Assay Kit v1 (Thermo Fisher Scientific Inc. Franklin, MA, USA).

Four patients, all of them men (age range 30–49 years), came to the Emergency ward presenting mild symptoms such as anosmia, asthenia, general bad condition, fever, and headaches. In the X-ray only one patient had ground-glass opacity. Three patients were admitted to the Internal Medicine department due to haematological alterations. All of the patients survived and were discharged after a hospitalization of an average of four days. PCR for SARS-CoV-2 was performed in all patients in nasopharyngeal swabs at their arrival and all three genes amplified (Table 1). When analyzed, all surgical masks also amplified for the three genes, except one, with an average of five Ct values higher than those in the nasopharyngeal swabs (Table 1). The average time of use of the surgical masks was 8 h in one and a half day.

Rapid and reliable SARS-CoV-2 diagnosis has become a priority in order to control outbreaks and stop the transmission chain. Obtaining nasopharyngeal swabs is an invasive procedure and can be complicated in patients such as children and the elderly.[5] Furthermore, it can generate aerosols with increased risk for healthcare workers. In our proof of concept tests, we have proven that RNA material can be detected on surgical masks material. The main advantages of using masks to detect viral RNA are that these are a non-invasive, easy to obtain, that might be particularly useful in certain uncooperative population groups, sampling does not require trained staff, and samples might be used for screening, medical follow-up and also for the detection of other respiratory pathogens[5] as William et al. demonstrated for *Mycobacterium tuberculosis* on mask samples.[6] On the other hand, the main limitations of this approach are the heterogeneity between nasopharyngeal swabs and surgical masks, the variability of viral excretion in different types of patients, the larger processing time of the mask sample, more time-consuming than processing the nasopharyngeal sample, less possibility of automation, and that the ideal preservation conditions (avoiding light exposure, refrigerating the mask in a hermetic sheath) can be complex for the patient.[5] In our patients the differences in Ct values between the nasopharyngeal swabs and surgical masks could be explained by the discontinued time of use of the mask, lack of ideal conservation conditions of the sample and the rapid clearance of the viral load associated with early clinical improvement in all of our patients. Even though this method seems like a promising non-invasive approach to detect SARS-CoV-2 RNA, more studies are needed to confirm its utility.

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Conflicts of interest

None.

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Appendix A. Members of the SARS-CoV-2 Working Group

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