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## Practice points

# Symptom-based screening for COVID-19 in healthcare workers: the importance of fever

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In December, 2019, a new acute respiratory syndrome appeared in Wuhan, China. The disease, later named COVID-19, is caused by a new coronavirus (SARS-CoV-2) [1–3]. Clinical presentation is mild in about 80%, moderate to severe in 15% and critical in 5% of cases [1–3].

The most common symptoms of COVID-19 are fever, fatigue, muscle pain, and dry cough [1–3]. Some patients may exhibit nasal congestion, chills, sore throat or diarrhoea [1–3]. In March 2020, interim Belgian guidelines recommended the screening only of symptomatic patients (fever and respiratory symptoms) who required hospitalization as well as of all healthcare workers (HCWs) with fever and respiratory symptoms [4]. We assessed the impact of using fever as a predictor for positivity of SARS-CoV-2 reverse transcription polymerase chain reaction (RT-PCR).

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All of the results of RT-PCR for SARS-CoV-2 performed between 16<sup>th</sup> March 2020 and 24<sup>th</sup> April 2020 in HCWs in our tertiary hospital of 1000 beds were collected along with clinical symptoms (fever, respiratory symptoms consisting of dry cough, sore throat, shortness of breath). Two periods were analysed: Period 1, before 30<sup>th</sup> March 2020, during which HCWs were tested only if they had fever and respiratory symptoms (however, some physicians were tested without fever); and Period 2, after 30<sup>th</sup> March 2020, during which HCWs were tested if they had respiratory symptoms with or without fever.

We included a total of 536 HCWs. Table I summarizes the clinical data during the two periods. During Period 1, 158 HCW were screened for SARS-CoV-2, including 50 with respiratory symptoms who were tested despite the absence of fever. Eighty-one (81/158, 51%) HCWs tested positive for SARS-CoV-2 (Table I). Among those who tested positive, 60/81 (74 %) had fever. During Period 2, of the 378 HCWs tested, only 94/378 (25 %) tested positive. Of those who tested positive, 49/94 (52%) had fever. Fever was present in only 63/284 (22%) of those who tested negative in Period 2. Finally, during the two periods studied, only 66/175 (38%) of non-febrile symptomatic HCWs tested positive.

Our results show that fever has a positive impact on the yield of RT-PCR for SARS-CoV-2. However, a proportion of COVID-19-positive cases, even when symptoms are combined, will be missed if fever is required as a criterion for testing. This was acknowledged by Chow *et al.* who recently showed that screening HCWs based on fever and respiratory symptoms is insufficient [5]. Among 48 symptomatic HCWs who tested positive for SARS-CoV-2, approximately 17% did not report fever, cough, shortness of breath, or sore throat. Among this group, chills, myalgia, coryza, and malaise were the most common

**Table I**  
Demographics and clinical characteristics of healthcare workers during two periods of screening

	All	RT-PCR positive	RT-PCR negative	P
Before 30 <sup>th</sup> March 2020				
Characteristics	N (%) = 158	N (%) = 81 (51%)	N (%) = 77 (49%)	
Age <45 years	111 (73%)	49 (44%)	62 (56%)	0.52
Female	125 (83%)	58 (46%)	67 (54%)	0.90
Fever	108 (68%)	60 (56%)	48 (44%)	0.00
Cough	121 (77%)	63 (52%)	58 (48%)	0.04
Shortness of breath	56 (35%)	26 (46%)	30 (54%)	0.14
Sore throat	98 (62%)	45 (46%)	53 (54%)	0.04
Fever + cough	80 (52%)	47 (58%)	33 (42%)	0.00
Fever + cough + shortness of breath	34 (23%)	19 (58%)	15 (47%)	0.07
Fever + cough + sore throat	48 (30%)	25 (53%)	23 (45%)	0.52
After 30 <sup>th</sup> March 2020				
Characteristics	N (%) = 378	94 (25%)	284 (75%)	
Age <45 years	213 (58%)	50 (23%)	163 (77%)	0.98
Female	253 (68%)	60 (23%)	197 (77%)	0.00
Fever	112 (30%)	49 (44%)	63 (56%)	0.00
Cough	244 (65%)	73 (30%)	171 (70%)	0.01
Shortness of breath	131 (35%)	39 (30%)	92 (70%)	0.43
Sore throat	190 (50%)	46 (24%)	144 (76%)	0.78
Fever + cough	68 (19%)	38 (52%)	32 (48%)	0.00
Fever + cough + shortness of breath	30 (8%)	14 (46%)	16 (54%)	0.01
Fever + cough + sore throat	44 (12%)	23 (52%)	21 (48%)	0.03

symptoms. The researchers concluded that screening only for fever, cough, shortness of breath, or sore throat might have missed 17% of symptomatic HCWs and that adding criteria such as myalgia and chills may still have missed 10% [5]. These data are very interesting especially for HCWs working in home-care facilities or geriatric wards where an outbreak could have devastating effects on the fragile older population.

It is important to note also that the difference in the RT-PCR positive rate between the two periods could also be attributed to hospital procedures adopted at the end of march consisting of universal mask wearing.

Nonetheless, as shown in our results, the use of fever as a selection criterion led to an increased efficiency of screening. This is of particular interest in areas confronted with a shortage of testing materials, or to enable prioritized testing in the context of expanded SARS-CoV-2 testing strategies including low-risk symptomatic persons. [6].

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## Author contributions

Y.J.C., L.B., J.D.G. and A.S.M. designed the study and analysed the data. All of the authors wrote and revised the manuscript. All authors approved the final manuscript.

## Conflict of interest statement

None declared.

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