

# Universal Screening of SARS-CoV-2 of Oncology Healthcare Workers — a Brazilian experience

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*Key-words:* COVID-19; Mass testing; Asymptomatic health-care workers; Oncology; Health-care workforce.

*Disclosure statement:* The authors declare that they have no conflict of interest and that the costs of the elaboration of this study were borne by the clinic itself — Centro de Terapia Oncológica, Petrópolis, RJ — Brazil.

## Abstract

The first confirmed case of coronavirus disease 2019 (COVID-19) in Brazil and Latin America was reported on February 26, 2020, in São Paulo. The outbreak of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) has

placed unprecedented strain on health-care services worldwide. Asymptomatic health-care workers (HCW) are a potential source of SARS-CoV-2 transmission, especially to immunocompromised Oncology patients. Screening of these HCWs may help contain transmission and isolate only those who require it.

At Centro de Terapia Oncológica (CTO), an Oncology clinic in Petrópolis, RJ — Brazil, all HCWs were screened for SARS-CoV-2 in order to isolate those who were asymptomatic/symptomatic and positive for the virus. They were all tested through IgM/IgG rapid testing and those who had symptoms were also tested with nasopharyngeal swabs for reverse transcription polymerase chain reaction (RT-PCR) tests besides IgM/IgG reactivity.

Amongst the 60 tested employees, 4 were positive for SARS-CoV-2 and were isolated. This method may be useful for health-care services to detect asymptomatic HCW and maintain workers' and patients' health, as transmission probability could be reduced while avoiding becoming short-staffed during this time of crisis.

## **Introduction**

Testing, diagnosing and isolating is the key to controlling the spread of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), and its clinical syndromic manifestations known as coronavirus disease (COVID-19), according to the World Health Organization<sup>1</sup>. Asymptomatic health-care workers (HCWs) are an underestimated potential source of infection and are worthy of testing<sup>2</sup>.

At present, Brazil has 85,380 (30/04/20) confirmed cases<sup>3</sup> and 5,901 (30/04/20) deaths<sup>3</sup>; sub notification and sub-testing due to social distancing and lack of testing kits compromise the data, indicating that the published numbers do not faithfully represent Brazil's reality. In the meantime, Rio de Janeiro (RJ) state registered 9,453 (30/04/20) diagnosed patients<sup>3</sup> and 854 (30/04/20) deaths<sup>3</sup>.

Centro de Terapia Oncológica (CTO) is a Oncology clinic in Petrópolis, countryside of Rio de Janeiro, Brazil. Chemotherapy infusions are about 565 monthly alone, not considering hormone therapy treatments. From January until the end of March 2020, around 7,291 outpatients consultations were performed at this oncology center.

While there are data suggesting that chemotherapy-treated patients with cancer are at risk for severe complications of influenza<sup>4,5</sup>, it is unclear how this might apply to COVID-19. A recent study has reported increased incidence and morbidity of COVID-19 in patients with cancer<sup>6</sup>, but those findings were directly challenged by others<sup>7</sup>. Preliminary data by Zhang *et al* have shown a relatively high mortality of 8 of 28 (29%) hospitalized patients with COVID-19 who were previously diagnosed with cancer<sup>8</sup>.

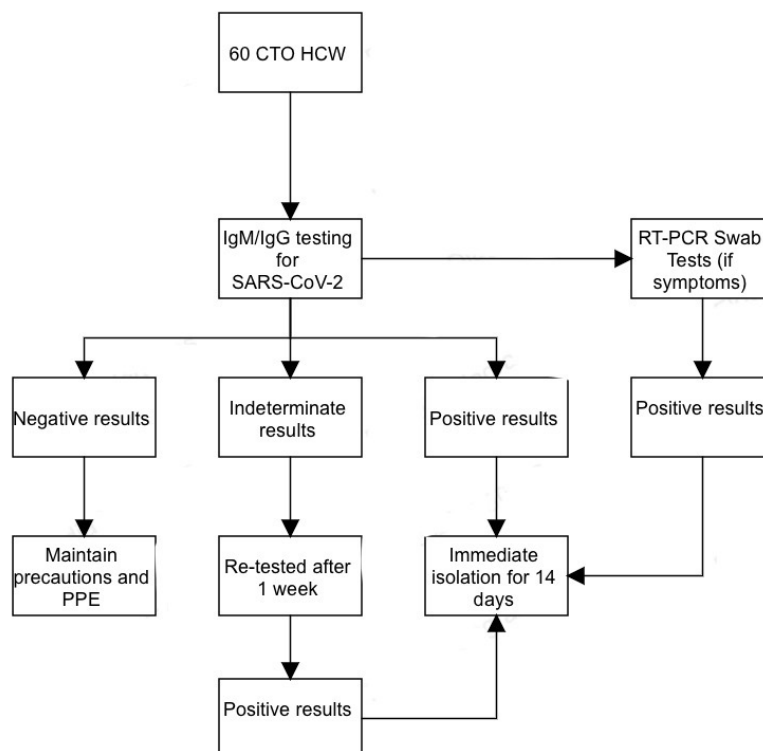
Given that asymptomatic transmission has been well documented<sup>18-22</sup>, this discussion aims to appoint the necessity of mass testing of both symptomatic and asymptomatic HCWs, in order to avoid workforce necessary quarantine, reduce spread in asymptomatic or mild cases and protect the health of HCWs and patients.

## Methodology

Between 09 and 29 April of 2020, 60 HCWs of CTO were tested for COVID-19; this number represents the total number of employees at the clinic. All HCW were tested through IgM/IgG rapid testing by near-patient lateral flow devices, while nasopharyngeal swabs and real-time polymerase-chain-reaction (RT-PCR) for SARS-CoV-2 were added as a secondary investigational method amongst symptomatic HCWs (e.g., fever, cough, shortness of breath, or sore throat).

The test results produced two main outcomes: (1) Asymptomatic and/or symptomatic positive IgM results and/or positive RT-PCR were quarantined immediately for 14 days; (2) HCW with negative serology and no symptoms were instructed to maintain protective measures and personal protection equipment (PPE); (3) HCW with indeterminate IgM results were re-tested after one week accompanied by an infectious diseases physician's guidance.

In total, all 60 employees were tested, 61 IgM/IgG tests were done (considering the one HCW who had to be re-tested) and 1 nasopharyngeal swabs for reverse transcription polymerase chain reaction (RT-PCR) testing, totalizing 62 tests. Flowchart 1 illustrates the testing outline.



Flowchart 1. Testing outline of CTO HCWs. All HCW were tested through IgM/IgG serology, and symptomatic HCWs were tested with Nasopharynx swab and RT-PCR. 1 HCW with indeterminate results was re-tested after 1 (one) week.

## Results

A total of 4 HCW tested positive among 62 tests on 28 April 2020. They were all immediately quarantined for 14 days and represent almost 7% of the service's total workforce (4 out of 60 HCWs). Out of the 4 positive cases, 2 were female, with 60 years or more, and the remaining 2 were men aged between 30 and 42 years; 3 of these HCW were asymptomatic and only 1 had symptoms of the disease.

Among the 3 asymptomatic HCWs, 2 had positive IgM and negative IgG results and 1 had positive IgM and IgG results; 1 had to be re-tested after one week due to an indeterminate result, testing positively for IgM and negatively for IgG.

The only confirmed symptomatic case was IgM and IgG negative and RT-PCR positive.

No HCW had only IgG positive results.

Results are illustrated in Tables 1 and 2.

	IgM	IgG	Symptomatic	RT-PCR Swab Test
Positive HCW 1	-	-	Yes	+
Positive HCW 2	+	+	No	NT
Positive HCW 3	+	-	No	NT
Positive HCW 4	+	-	No	NT

	IgM/IgG	RT-PCR Swab Test
Asymptomatic HCWs	59	0
Symptomatic HCWs	1	1

Tables 1 and 2. Results outline obtained after CTO HCWs' testing. All HCW were tested through IgM/IgG serology, and symptomatic HCWs were tested with Nasopharynx swab and RT-PCR. 1 HCW with indeterminate results was re-tested after 1 (one) week. NT = Not Tested.

## Conclusions

It's urgent and important to address the impact of testing HCW at any given service. In this case, detecting 3 asymptomatic and 1 symptomatic workers gave the service the opportunity to correctly isolate those who could put themselves and patients at risk, especially given the type of patients who frequent the CTO, who are mostly immunosuppressed to some degree.

Furthermore, wide availability of testing for antibodies and the universal testing of HCW would be a game changer as it: 1) reduces in-hospital transmission<sup>16</sup>; 2) reduces a potential source of asymptomatic ongoing transmission during a

period of social distancing; 3) promotes the wellbeing of HCW ensuring that infected colleagues are promptly tested and isolated<sup>17</sup>; 5) enables the service to isolate those who require it, avoiding being short-staffed due to self-isolation or widespread contamination of the HCW.

Unfortunately, mass testing is still not a tangible reality for most healthcare services in Brazil, especially in the public health sector, mainly due to financial reasons.

Finally, it manifests itself as a wise decision for healthcare services, particularly in the Oncology area, as it lessens disease transmission, reduces potential high costs due to patient profile while allowing almost usual service functioning.

As of April 30 2020, no CTO oncological patient was officially diagnosed with COVID-19 and mass testing of its HCW may have contributed to diminish asymptomatic SARS-CoV-2 transmission and maintain the service's patients health.

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