



Difference Between Positivity and Infectivity In RT-PCR Positive Patients for Sars-Cov-2

Manuel Zarzuela Ramírez*

Department of Preventive Medicine and Public Health, University of Cádiz, Spain

***Corresponding author:** Manuel Zarzuela Ramírez, Associate professor, Department of Preventive Medicine and Public Health, University of Cádiz, Spain.

Received Date: November 30, 2020

Published Date: February 25, 2021

Introduction

As the pandemic evolves, we assimilate concepts that are very relevant to better understand the situation. Much progress has been made, in just a few months, in understanding the transmission dynamics of SARS-CoV-2 and the duration of infectivity in patients. In this sense, it is very important to know when a person diagnosed with Covid 19 stops transmitting the disease. At the beginning of the pandemic, there was a correlation between positivity and infectivity. This is, it was thought that all people with positive RT-PCR could transmit SARS-CoV-2 [1].

At present and, after multiple publications, it has been possible to show that the persistent detection of RNA is not equivalent to the existence of a viable virus that can be transmitted to other people around. In fact, the persistence in the positivity of the tests is associated with the detection of RNA residues that do not have infective capacity. On the one hand, it has been found that the excretion of the virus is drastically reduced after the first week or ten days from the onset of symptoms. On the other hand, in parallel, and due to issues associated with the efficiency of pandemic management, we have moved from an evidence-based strategy to a symptom-based strategy.

Therefore, at present, a person who is PCR positive for SARS-CoV-2, can abandon the isolation after 10 days has passed (if he has not had a fever for more than 24 hours and has improved from the rest of the symptoms) since that person's viral load is insufficient to transmit the virus to another person (Centers for Disease Control and Prevention, CDC) [2]. There are cases that are identified that do not have symptoms. In this situation, the CDC advises stopping

the isolation 10 days after their first positive RT-PCR test for SARS-CoV-2 RNA [3].

This date is still arbitrary since that person can be positive, indeed, from that day, but it is also equally plausible that it has been positive for 3, 5 or 7 days, for example. Cases have even been identified that have positive RT-PCR results for months, so that positivity identified at a specific moment could be many weeks old (not having, therefore, infective capacity). So, when it is said that an asymptomatic person must be in isolation for 10 days from the date of the detection of the positive PCR, we are putting ourselves in the most unfavorable scenario, which is that the positive was positive from the same day of the positivity of the test. Obviously, that does not have to be the case. If we do not delve into this aspect, we are treating these situations in the same way when we really have different realities which require different actions that could be more refined with the use of serology [4].

In Spain we have more than a million cases of COVID 19. In the official protocols that we use in hospitals, a concept is used that I find interesting: the concept of resolved infection. A case of resolved infection is defined as an asymptomatic person with positive IgG serology regardless of the result of the RT-PCR. If an asymptomatic person has a positive RT-PCR (a very common situation) it may be efficient to perform a serology. If that person has a positive IgG, it can be considered a resolved infection and does not require isolation or contact study. It is true that there is a cost associated with carrying out these tests, but it is also true that the fact that these people are not working for 10 days implies

an associated cost, probably much higher. On the other hand, the fact of being an isolated person carries a significant psychological wear and tear that should be assessed when assessing globally the specific situation of this group of patients and that could be avoided on many occasions by performing a serology. Furthermore, if the patient is PCR positive and IgG positive, no contact study would be required. The knowledge of this fact would not only avoid the isolation of the person who has been detected positive, but also their contacts, so that the beneficial effects of performing the serology would multiply [5].

In short, the use of tests, especially in asymptomatic individuals, could have psychological benefits on the case (and their contacts), on the economy (many people who now remain in isolation could work) and on the correct monitoring of the epidemiological situation (since it would distinguish between active infection and resolved infection). In fact, if we reflect on this issue, the use of IgG G is in accordance with the CDC criteria since IgG G begins to be detected 10-15 days after contact with the virus. The positivity of IgG G assures us that it has already been a long time since contact with the virus (at least ten days) and therefore the reasoning that is applied would be similar, in substance, to the criteria of the CDC, since in these circumstances the viral load has decreased a lot and the case, although still positive, no longer has infective capacity.

For healthcare workers, the CDC advises that an evidence-based approach can be used in some cases, but it is of limited utility because cases can be positive RT-PCR for a prolonged time. If this approach is used, two negative tests are required for labor incorporation since the possibility of incorporating a health worker with a positive PCR underlies and not being certain that it is a case with prolonged viral shedding. Obviously, this uncertainty in a professional who treats many patients leads to a prudent attitude being chosen. I think they are concepts that should be adjusted a bit. It would be interesting to incorporate serology into the evidence-based strategy to eliminate uncertainties and to be sure that it is a resolved infection and therefore without infective capacity [6].

On the other hand, and from the epidemiological point of view, it is very interesting to distinguish an active infection from

a resolved infection since, from active infections, the situation can be monitored in a more refined way, especially considering that people with infections resolved can have a positive RT-PCR test for weeks and even months. If active and resolved infections were equally assessed, we could be introducing relevant biases on when the exposures that conditioned the positivity of the test occurred. This fact would have a negative effect on the correct interpretation of the epidemiological curves, which would lead us to misinterpret the reality of what is happening [7].

In conclusion, I consider it very relevant to distinguish between positivity and infectivity since this distinction has implications, not only on the duration of isolations, but also on psychological and socioeconomic aspects that are of extraordinary relevance in the correct development of a country.

Acknowledgment

None.

Conflict of Interest

No conflict of interest.

References

1. Ministry of Health Spain (2020) COVID-19 early detection, surveillance and control strategy.
2. Centers for Disease Control and Prevention (2020) Duration of Isolation and Precautions for Adults with COVID-19.
3. Centers for Disease Control and Prevention (2020) Symptom-Based Strategy to Discontinue Isolation for Persons with COVID-19.
4. Zou L, Ruan F, Huang M, Lijun Liang, Huitao Huang, et al. (2020) SARS-CoV-2 Viral Load in Upper Respiratory Specimens of Infected Patients. *N Engl J Med* 382(12): 1177-1179.
5. He X, Lau EHY, Wu P, Xilong Deng, Jian Wang, et al. (2020) Temporal dynamics in viral shedding and transmissibility of COVID19. *Nat med* 26(5): 672-675.
6. Bullard J, Dust K, Funk D, James E Strong, David Alexander, et al. (2020) Predicting infectious SARS-CoV-2 from diagnostic samples. *Clin Infect Dis*.
7. Cheng HY, Jian SW, Liu DP, Ta-Chou Ng 2, Wan-Ting Huang, et al. (2020) Contact Tracing Assessment of COVID-19 Transmission Dynamics in Taiwan and Risk at Different Exposure Periods Before and After Symptom Onset. *JAMA internal medicine* 80(9):1156-1163.