

Subjective science in times of COVID-19: fallout effects from false-positive PCR testing

Igor Khmelinskii^{1,4,5,6}, Peter Stallinga^{2,4,5} and Leslie V. Woodcock^{3,5}

University of Algarve, Faculty of Science and Technologies, Faro, Portugal

¹Department of Chemistry and Pharmacy

²Department of Electronic Engineering and Informatics

³Department of Physics

⁴Centre of Electronics, Optoelectronics and Telecommunications

⁵Ossónoba Philosophical Society, Faro, Portugal

⁶Email correspondence: ikhmelin@ualg.pt

Distinguished research physicist, the late John Ziman, commenting in *Nature*¹, 25 years ago this week, forewarned the science community about an insidious ascendancy of scientists whose subjective circumstances are such that they cannot be objective in the pursuit of scientific truths. His misgivings are aptly summarized in the accompanying cartoons (**Figure 1**). Ziman was not the first. 100 years earlier, the Editor of *Nature*² fiercely criticised the foundation of an Institute of Chemistry with Royal Charter. He argued that a "trades union for scientists" would compromise objectivity when its members were called upon to be advisors to government officials, or courts of law, or commercial sponsors, at the expense of scientific truth, citing the British Medical Association as example. We also find in this commentary the original renowned quotation: "There are three types of witness, simple liars, damn liars, and experts...whose cultivated faculty of evasion effect is worse than lies." [ref.2, p74, col. 2, lines b16-9]. This 1885 *Nature* article² is now a prophecy fulfilled.

Here, we fast-forward to 2020 and COVID-19 pandemic whereupon governments around the world have sought scientific advice from 'experts'. Ruling politicians and their scientific advisors cannot coexist with ignorance, they must hypothesise. As predicted^{1,2}, they do so subjectively. The COVID-19 pandemic priorities have focused on prevention by detection and response. National governments' decisions are based upon a hypothetical interpretation of detection statistics from PCR tests that are used to define COVID-19 'cases', 'hospitalisations', and 'deaths'. "Test, test, test, and keep testing..." is the WHO expert advice to governments³. Official statistics assume, a priori, that PCR tests are nigh 100% true detectors of COVID-19 infection. Here, we report that positive PCR test results can be 100% false. Statistics of the primary outbreaks are to some extent distorted. False positives explain almost the whole of the 2nd and subsequent apparent COVID-19 outbreak peaks in various countries, giving rise to false-positive fallout effects with dire consequences.

SCIENTIFIC OBJECTIVE



Fig. 1 Cartoon taken from *Nature*¹, 29th August 1996, depicting the holy grail of pure research scientists to find the truth. *Bone fide* scientists whose goal is wholly objective must coexist with ignorance unless, or until, they have further evidence to support the theory of their objective observations. Then, the hypothetical explanation must withstand scrutiny against further experimental observations. The word 'scientific' implies a platform of the scientific method that seeks the truth, the whole truth and nothing but the truth.

SUBJECTIVE SCIENCE



The cartoon also lampoons pseudoscientists, who claim that platform, whilst they advise their sponsors using subjective hypothetical predictions. The advice tends to be *ad hoc* speculation dressed up in computer-model prediction and then acted upon as though the advice were scientific 'truth'.

Whilst we remain ignorant of essential scientific information to combat viral diseases, the fallout effects of subjective science, in times of COVID-19, are incalculable and perhaps already worse than the original pandemic of spring 2020.

PCR testing

Unlike all other members of the corona family, that includes common colds and flu rhinoviruses, influenza A and B, coronaSARS-1, and countless other variants, all of which have a combined world mortality rate of 0.13% of infected patients, COVID-19 can have more severe symptoms for diseased patients with a mortality rate roughly 10 times higher. At the outset of the pandemic, spring of 2020, nobody in the world knew what was going to happen, speculation was free to flourish. Scientific data was required on the scale and whereabouts of infected people, so that government advisors could formulate predictions leading to policies of intervention and social restrictions, medical service planning etc. Positive test numbers are required by 'experts', hence also government officials, to define (i) the numbers of COVID-19 cases, and (ii) COVID-19 hospitalisations, and (iii) COVID-19 deaths.

In January 2021, the World Health Organisation (WHO) published a document⁴ that called attention to the relevance of false positive results of Reverse Transcription (RT-) Polymerase Chain Reaction, (PCR) tests for a SARS-CoV-2 virus, the causing agent of respiratory disease COVID-19. PCR tests are used to directly screen for the presence of viral RNA, which will be detectable in the body before antibodies form or symptoms of the disease are present. During PCR testing for COVID-19, substances known as reverse transcriptase, or DNA polymerase, are added to a nasopharyngeal sample in a laboratory. These substances work to make numerous copies of any viral RNA that may be present. This procedure ensures enough copies of the RNA are present to signal a positive result, as specifically designed primers and probes attach themselves to sequences of the genetic code of the virus to signal that a pathogen has been found. A field test study in UK recently confirmed significant false-positive numbers with adverse fallout effects.⁵

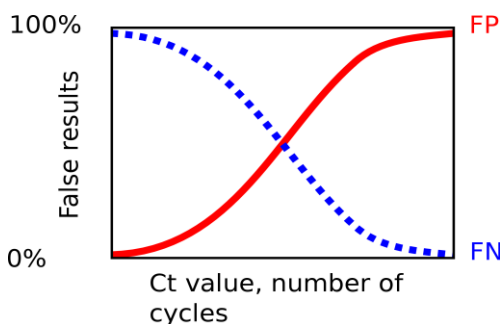


Fig.2 Graphic illustration of the outcome of incorrect PCR test results: solid red line shows false positive (FP) when nobody is infected with COVID-19, dashed blue line shows false negative (FN) if every testee were infected with COVID-19, as a function of cycle count in PCR tests. [Note: outcome can be subjective depending on duration of test criteria applied.]

The PCR test is not fit for purpose^{6,7}. It is only useful for reproducing genetic material for lab experiments *in vitro*, but it cannot be a test for the presence of a specific virus, e.g. COVID-19 *in vivo*. Despite the warning signals⁴, PCR testing statistics are being used by governments, on the advice of 'experts' as a diagnostic tool in the fight against COVID-19, ignoring the proper medical definition of COVID-19 disease, determined from symptomatic diagnosis by qualified doctors. The disease prevalence alters the predictive value of test results. As disease prevalence decreases, the risk of false positive increases. This implies that the probability of a person who has a positive result being truly infected with the COVID-19 virus decreases as prevalence decreases, irrespective of the specificity claimed by its manufacturers.

We see from **Figure 2**, moreover, that a PCR test *per se* can be subjective as the number of cycles increases. The outcome can depend upon when counting is stopped. There is an inevitable increase in the corona-like RNA, from any other respiratory virus or from exosomes⁶. All non-infected persons could show false positive given time depending on the criteria applied to terminate the test.

Bayesian trap

An alternative explanation of the apparent second and subsequent pandemic peaks in 'case' numbers can be simply formulated from the Bayesian statistics theorem⁸. If a PCR-test has $X\%$ correct result and one is tested positive, it does not mean one has $X\%$ chance of being infected, since the probability of infection depends upon the prevalence of the virus. In the extreme case, when the virus is absent in society, all positive test cases are false positives. In other words, the rate of false positive tests as a fraction of all positive tests increases with decreasing infection rate in the population, and can be any number, irrespective of the claims about the specificity made by the manufacturers or providers of the test. In the case of COVID-19 PCR tests, the specificity *in vitro* may be high, but the PCR test is non-specific *in vivo*. This result is a consequence of the production of exosomes with RNA when the immune system is triggered by any respiratory virus⁷, it counts positive (**Figure 2**).

Thus, a 'pseudo-epidemic' can be created without a single person in society being infected with COVID-19. Acting upon 'expert' advice, many governments have decreed that a person with a positive test (a 'case') needs to have all his contacts tested. If X is the fractional testing accuracy, the false-positive test fraction of total tests $(1-X)$. In a state of zero prevalence of the virus, on average a person has contact with N other people the last two weeks, that must be tested too, the reproduction number of the propagation of the 'viral entity' and not necessarily a biological virus, it can also be the testing that is 'going viral'. We have the simple equation for the transmission factor R (R_0 at zero prevalence)

$$R_0 = (1-X) N \quad (1)$$

Experts then interpret $R_0 > 1$, at zero prevalence for example, to be the criterion for an increase in 'cases', i.e. an epidemic. The Bayesian trap, when $R_0 > 1$, can lead to exponentially increasing number of apparent cases without any biological COVID-19 virus at all.

Equation (1) also suggests that a pseudo-epidemic case peak can also be caused by any spate of PCR testing. For example, during a holiday period, many more people travel, and a negative test is needed. However, a false-positive test wave can be created without anybody being ill. The number of 'cases' simply being proportional to the number of travellers and equal to the number of false positives.

Excess mortality

Let us assume to begin with that all the excess deaths (**Figure 3**) from 29 Euro MOMO countries, that spans the period of pre-COVID-19 pandemic to present day are due to respiratory viruses of all kinds. We must bear in mind however, that there is a fallout effect that itself causes excess deaths that we

are presently unable to quantify. The excess deaths due to respiratory viruses must be less than indicated in **Figure 3** to an unknown extent. These fallout deaths, however, may not be negligible.

The total number of excess deaths in Euro MOMO countries in a prescribed period is obtained by integrating the real peak, minus baseline, areas. The original COVID-19 peak from weeks 9 to 17 in 2020 number of deaths is approximately, height (35,000 pw) x base (8 weeks)/2 =140,000 excess deaths. The total population of Euro MOMO 29 countries is around 600 million. The number of COVID deaths reported in UK with ~ 1/10 population of Euro MOMO, registered 45,000 COVID-19 deaths by the end of week 20 in 2020. This tells us that around 70% of all registered 'COVID-19 deaths' in first UK pandemic, for example, are of people who have died from causes other than COVID-19 disease within 28 days of a positive COVID-19 PCR test.

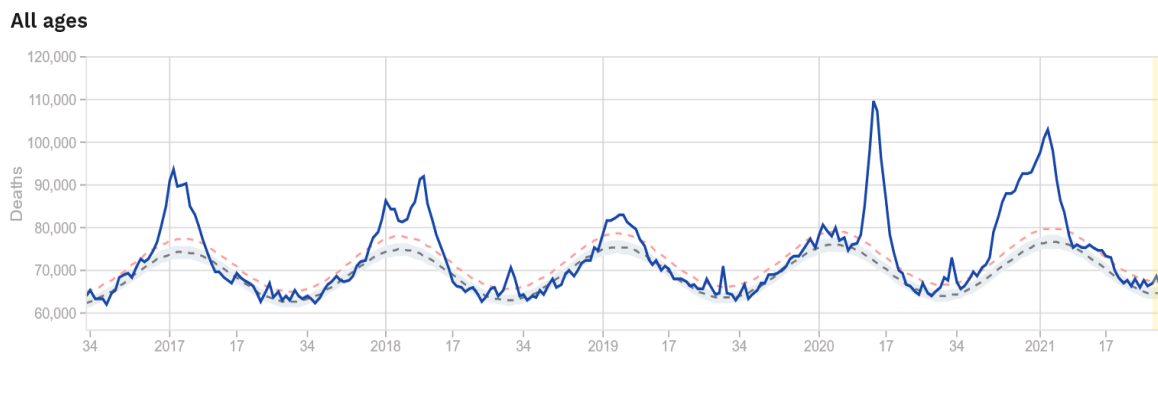


Fig. 3 Weekly excess deaths in Euro MOMO 29-member countries (solid blue line): epidemic peaks in winter months Nov.-Feb. can be identified as rhino cold/flu, influenza A, B, and corona-SARS, etc.; the clear COVID-19 sharp peak is seen in spring 2020; overlapping peaks of flu epidemics are clearly visible in the winter season 2020-2021 which includes deaths from all flu viruses plus COVID-19 pandemic fallout mortalities; there have been no excess mortalities since February 2021, [Figure taken from Euro MOMO website⁹]

Another salient observation is that the total number of excess deaths in the original COVID-19 spring-2020 peak is of the same order, in fact slightly less, than the total number of excess deaths, around 150,000 for all 29 Euro MOMO countries combined, from the winter flu epidemics of 2017 and 2018, before the advent of COVID-19.

The 2020-2021 autumn-winter peak suggests that there are three overlapping peaks with areas that could relate to various flu virus epidemics, including COVID-19. We do not have any information from PCR-tests, or indeed, any other source to identify the flu viruses involved. We do see, however, that all these excess deaths stopped abruptly in early March 2021. During the period from March 2021 the third wave of COVID-19 'cases' and 'deaths' were spiralling upwards because of more extensive PCR testing and hence more false positives, that resulted in lockdown civil restrictions for the following 6 months to present day.

There are other curious facts which are inexplicable by the WHO-experts' hypotheses, and yet are readily explained by the Bayesian trap. How can it be that there are outbreaks with, and outbreaks without excess mortality, as evidenced by **Figure 3**, for example? We are told by the 'experts' that viruses mutate rapidly to more infectious strains. that The mortality rate can change as the virus mutates, but the implication that it has changed back when 'cases' increase, whilst deaths are zero, is surely subjective pseudoscience.

Fallout effects,

Experts advising Government politicians, cite the number of 'cases' data from PCR-positives. They can adversely affect the medical services, normally available to other patients with life-threatening illnesses, during an escalation of 'cases'. A unit 'QALY' is defined as one full healthy year of quality life. For a country of 17 million people (e.g. the Netherlands) the lockdown measures could save 100,000 QALY by avoiding COVID-19 deaths, but that is offset by a staggering estimated loss of 620,000 QALY by fallout effects¹⁰. Cited effects in national newspapers anecdotal reports include postponement of hospital admissions and health services, delaying or cancelling life-saving surgery or treatment, job-loss, poverty and associated malnutrition, deaths from alcoholism, increased suicides: the list is endless, and still counting in all countries. To obtain a very rough estimate of the scale of this fallout effect, if we assume the average person has 40 years of life ahead, this implies effectively condemning roughly 0.076% of the population to death by severe lockdown measures on the advice of 'experts'.

The abandonment of the 'scientific method' in a time of crisis is a fallout effect. There has already been a suggestion that we must redefine the 'scientific method' in biological research¹¹ where vast amounts of 'omics' data could be involved. Indeed, in the present context, to permanently ignore the scientific method in a programme to eliminate viral diseases, for example COVID-19, by testing and vaccination, would result in evermore subjective pseudo-science. Omics by itself can't produce any new knowledge, as many, if not all, correlations coming up in their mega-data analyses could result from specific experimental conditions that tell us nothing. Live systems are complex, adaptable, and capable of compensating for many conditions never used in laboratory experiments. We agree with Sean Carroll¹¹, "hypotheses are the whole point". If we apply the scientific method properly, all *bone fide* scientists, and truthful expert advisors, must admit to, and coexist with, ignorance. The best true scientific advice is enshrined in the proverbial "*When in doubt, do nowt!*" (nothing).

We conclude there is no scientific evidence to support the WHO consensus hypothesis that the COVID-19 second and subsequent pandemic peaks are the result of a more contagious and more rapid mutating virus, with new variants, emerging all over the world, causing new outbreaks of the pandemic, including the disease in vaccinated persons, and repetitive infection in previous COVID-19 patients. Such a scenario would lead to a never-ending cycle of new waves, mass PCR-testing and vaccinations programmes. By contrast, the statistical evidence, *inter alia*, of excess deaths shows just the opposite; the original pandemic as such ended in 2020. The total excess deaths due to COVID-19 are less than ordinary flu epidemic winter peak of 2017 or 2018, for example. The first wave of COVID-19 that developed in Europe and US in March-May 2020 was mainly real, while two or more subsequent waves are an artefact of false-positive results of PCR tests, and not indicative of rampant, or indeed significant levels of infection by COVID-19 virus or its mutants.

Citations

1. Ziman, J., Is Science losing its objectivity? , Nature **382** 751-754 (1996). doi: 10.1038/382751a0.
2. Editorial: The whole duty of a chemist, Nature **XXXIII** No. 859 73-77 (1885).
3. BBC, WHO head: 'Our key message is: test, test, test', March 16, 2020, <https://www.bbc.com/news/av/world-51916707>, consulted on July 6, 2021
4. WHO Information Notice for IVD Users 2020/05, Nucleic acid testing (NAT) technologies that use polymerase chain reaction (PCR) for detection of SARS-CoV-2, 20 January 2021, <https://www.who.int/news/item/20-01-2021-who-information-notice-for-ivd-users-2020-05>, (consulted 25/03/2021)

5. Healy, P., Khan, A., Metezai, H., Blythe, I., Asad, H., The impact of false positive COVID-19 results in an area of low prevalence, *Clinical Medicine (Lond.)* 21(1) e54-e56 (Jan. 2021)
<https://www.doi:10.7861/clinmed.2020-0839/>
6. Nickbakhsh, S., Mair, C., Matthews, L., Reeve, R., Johnson P. C. D., Thorburn, F., von Wissmann, B., Reynolds A., McMenamin, J., Gunson, R. N., Murcia, P. R., Virus–virus interactions impact the population dynamics of influenza and the common cold, *PNAS* December 26, 2019, **116** (52) 27142-27150; first published December 16, 2019; <https://doi.org/10.1073/pnas.1911083116>
7. Khmelinskii, I., Stallinga, P., and Woodcock, L.V., Role of exosomes in false-positive covid-19 PCR tests: non-specificity of SARS-CoV-2-RNA *in vivo* detection explains artificial post-pandemic peaks *Lancet Respiratory Medicine*, to be submitted (2021)
8. see e.g. Hayes, A. and Westfall, P, Bayes' Theorem Definition (2020)
<https://www.investopedia.com/terms/b/bayes-theorem.asp> (visited on 16/08/2021)
9. Euro MOMO 2021, <https://www.eoromomo.eu/graphs-and-maps>
(visited on 08/08/2021)
10. blck.2021 (visited on 08/04/2021)
<https://www.blckbx.tv/videos/overheid-offert-520000-levensjaren>
11. Editorial Comment, Defining the Scientific Method, *Nature Methods*, **6(4)**,237 (2009).

Acknowledgements: This investigation was performed under the auspices of The Ossónoba Philosophical Society (OPS). www.ossonobaphilosophicalsociety.org

Author contributions PS made the initial observations and wrote first draft. IK provided the alternative hypothesis and researched the evidence. LVW guided the review and contributed to the interpretation. All authors have contributed to the analysis of the literature cited, and revising it critically for factually truthful content and share responsibility for the decision to submit this version for publication.

Competing interests: The authors declare no competing interests.