

Flaws in Coronavirus Pandemic Theory¹

David Crowe

David.Crowe@theinfectiousmyth.com

Version 7.2. April 10, 2020

<https://theinfectiousmyth.com/book/CoronavirusPanic.pdf>

The revision history has been moved to the end of the document.

1. Executive Summary

The world is suffering from a massive delusion based on the belief that a test for RNA² is a test for a deadly new virus, a virus that has emerged from wild bats or other animals in China, supported by the western assumption that Chinese people will eat anything that moves.

If the virus exists, then it should be possible to purify viral particles. From these particles RNA can be extracted and should match the RNA used in this test. Until this is done it is possible that the RNA comes from another source, which could be the cells of the patient, bacteria, fungi etc. There might be an association with elevated levels of this RNA and illness, but that is not proof that the RNA is from a virus. Without purification and characterization of virus particles, it cannot be accepted that an RNA test is proof that a virus is present.

Definitions of important diseases are surprisingly loose, perhaps embarrassingly so. A couple of symptoms, maybe contact with a previous patient, and a test of unknown accuracy, is all you often need. While the definition of SARS, an earlier coronavirus panic, was self-limiting, the definition of COVID-19 disease is open-ended, allowing the imaginary epidemic to grow. Putting aside the existence of the virus, if the COVID-19 test has a problem with false positives (as all biological tests do) then testing an uninfected population will produce only false-positive tests, and the definition of the disease will allow the epidemic to go on forever.

This strange new disease, officially named COVID-19, has none of its own symptoms. Fever and cough, previously blamed on uncountable viruses and bacteria, as well as environmental contaminants, are most common, as well as abnormal lung images, despite those being found in healthy people. Yet, despite the fact that only a minority of people tested will test positive (often less than 5%), it is assumed that this disease is easily recognized. If that was truly the case, the majority of people selected for testing by doctors should be positive.

¹ Officially the virus is called SARS-CoV-2 and the disease it is believed to caused, COVID-19. We will just refer to COVID-19 for the current virus panic, and SARS for the 2003 panic.

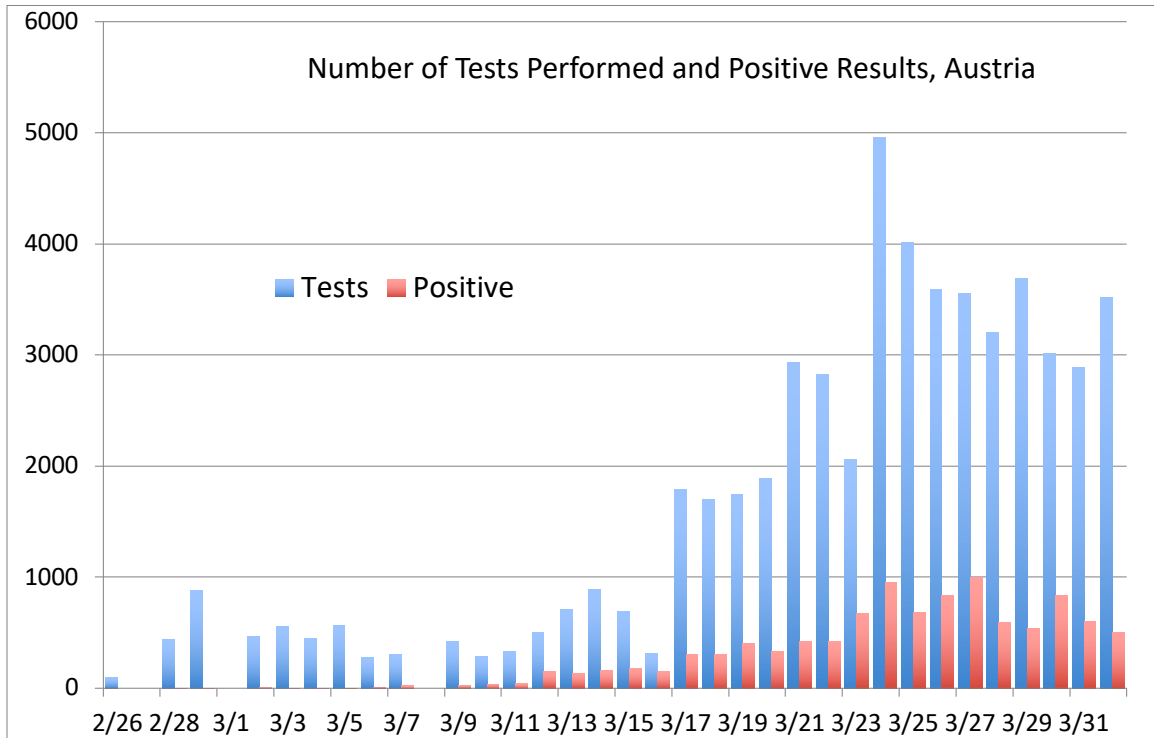
² Ribonucleic Acid (RNA) is chemically very similar to DNA, except that one of the four bases, Thymine, is replaced by Uracil. In function it is very different, being created from DNA for a temporary use such as creating a protein molecule or being a messenger. It is also found in a single strand rather than a double-helix.

The COVID-19 test is based on PCR, a DNA manufacturing technique. When used as a test it does not produce a positive/negative result, but simply the number of cycles required to detect sufficient material to beat the arbitrary cutoff between positive and negative. If positive means infected and negative means uninfected, then there are cases of people going from infected to uninfected and back to infected again in a couple of days.

A lot of people say it is better to be safe than sorry. Better that some people are quarantined who are uninfected than risk a pandemic. But once people test positive, they are likely to be treated, with treatments similar to SARS. Doctors faced with what they believe is a deadly virus treat for the future, for anticipated symptoms, not for what they see today. This leads to the use of invasive oxygenation, high dose corticosteroids, antiviral drugs and more. In this case, some populations of those diagnosed (e.g. in China) are older and sicker than the general population and much less able to withstand aggressive treatment. After the SARS panic had subsided doctors reviewed the evidence, and it showed that these treatments were often ineffective, and all had serious side effects, such as persistent neurologic deficit, joint replacements, scarring, pain and liver disease. As well as higher mortality.

2. Introduction

The COVID-19 scare that emanated from Wuhan, China in December of 2019 is an epidemic of testing, as the graph below with test statistics from Austria shows. There is no proof that a virus is being detected by the test and there is absolutely no concern about whether there are a significant number of false positives on the test. What is being published in medical journals is not science, every paper has the goal of enhancing the panic by interpreting the data only in ways that benefit the viral theory, even when the data is confusing or contradictory. In other words, the medical papers are propaganda.



It is also an epidemic by definition. The definition, which assumes perfection from the test, does not have the safety valve that the definition of SARS did, thus the scare can go on until public health officials change the definition or realize that the test is not reliable. SARS, according to CDC, required a respiratory symptom; close contact with another SARS case or travel to a designated epidemic area; and a positive SARS test (or lack of antibodies believed to be protective) [48]. Once everyone had been quarantined, the second criterion was difficult to achieve outside of a hospital, and numbers plummeted.

What I learned from studying SARS, the previous big coronavirus scare, after the 2003 epidemic, was that nobody had proved a coronavirus existed, let alone was pathogenic. There was evidence against transmission, and afterwards, negative assessments of the extreme treatments that patients were subjected to, the nucleoside analog antiviral drug Ribavirin, high dose corticosteroids, invasive respiratory assistance, and sometimes oseltamivir (Tamiflu). This is documented in my draft book chapter (mostly complete) that you can find here:

<http://theinfectiousmyth.com/book/SARS.pdf>

3. Virus Existence

Scientists are detecting novel RNA in multiple patients with influenza or pneumonia-like conditions, and are assuming that the detection of RNA (which is believed to be wrapped in proteins to form an RNA virus, as coronaviruses are believed to be) is equivalent to isolation of the virus. It is not, and one of the groups of scientists was honest enough to admit this:

“we did not perform tests for detecting infectious virus in blood” [2]

But, despite this admission, earlier in the paper they repeatedly referred to the 41 cases (out of 59 similar cases) that tested positive for this RNA as, “41 patients... confirmed to be infected with 2019-nCoV.”

Another paper quietly admitted that:

“our study does not fulfill Koch’s postulates” [1]

Koch’s postulates, first stated by the great German bacteriologist Robert Koch in the late 1800s, are simple logic, and can be stated as:

- Purify the pathogen (e.g. virus) from many cases with a particular illness.
- Expose susceptible animals (obviously not humans) to the pathogen.
- Verify that the same illness is produced.
- Some add that you should also re-purify the pathogen, just to be sure that it really is creating the illness.

Famous virologist Thomas Rivers stated in a 1936 speech, “It is obvious that Koch's postulates have not been satisfied in viral diseases”. That was a long time ago, but the problem continues. None of the papers referenced in this article have even attempted to purify the virus. And the word ‘isolation’ has been so debased by virologists it means nothing (e.g. adding impure materials to a cell culture and seeing cell death is ‘isolation’).

Reference [1] did publish electron micrographs, but it can clearly be seen in the lesser magnified photo, that the particles believed to be COVID-19 are not purified, as the quantity of material that is cellular is much greater. The paper notes that the photos are from “human airway epithelial cells”. Also consider that the photo included in the article will certainly be the “best” photo, i.e. the one with the greatest number of particles. Lab technicians may be encouraged to spend hours to look around to find the most photogenic image, the one that most looks like pure virus.

There is no way to tell that the RNA being used in the COVID-19 PCR test is found in those particles seen in the electron micrograph, because you cannot see what the contents are, they could be protein, RNA or DNA. There is thus no connection between the test, and the particles, and no proof that the particles are viral.

A similar situation was revealed in March 1997 concerning HIV, when two papers published in the same issue of the journal “Virology” revealed that the vast majority of what had previously been called “pure HIV” was impurities that were clearly not HIV, and the mixture also included micro-vesicles that look very similar to HIV under an electron microscope, but are of cellular origin. [5][6]

4. Disease Definition and Testing

Infectious diseases always have a definition, but they are usually not publicized too widely because then they would be open to ridicule. They usually have a “suspect case” category based on symptoms and exposure, and a “confirmed” category that adds some kind of testing.

Reference [13] describes a suspect case definition for COVID-19, derived from WHO definitions for SARS and MERS (Middle East Respiratory Syndrome). This definition was in effect until January 18, 2020, and required all four of the following criteria:

- **“Fever, with or without recorded temperature”**. Note that there is no universal definition of fever, so this may just be the opinion of a physician or nurse. With SARS a fever was defined as 38C even though normal body temperature is considered to be 37C (98.6F).
- **“Radiographic evidence of pneumonia”**. This can occur without illness, as was seen in a 10 year old boy with no clinical symptoms [3]. He was diagnosed with pneumonia despite this.
- **“Low or normal white-cell count or low lymphocyte count”**. This is not really a criterion as every healthy person is included. This is also strange because people suffering from an infection normally have elevated white blood cell counts (although they may drop in people dying from an infection).
- **One of the following three:**
 - **“No reduction in symptoms after antimicrobial treatment for 3 days”**. This is a standard indication of a ‘viral’ pneumonia, i.e. one that does not resolve with antibiotics.
 - **“Epidemiologic link to the Huanan Seafood Wholesale Market”**. This, and the next criterion, create the illusion of an infectious disease, as it prefers the diagnosis of connected cases.
 - **“Contact with other patients with similar symptoms”**.

On January 18th the last, three-part category was changed to:

- One of the following:
 - “travel history to Wuhan”
 - “direct contact with patients from Wuhan who had fever or respiratory symptoms, within 14 days before illness onset”

The big problem is that, in contrast to the definition for SARS, a “confirmed case” of COVID-19 did not originally require the criteria for a suspect case to be met, but simply a positive RNA test. It did not require any symptoms or evidence of contact with previous cases, illustrating total faith in the PCR technology used in the test. The World Health Organization definition has the same flaw [15].

It was the fact that the SARS definition required both a reasonable possibility of contact with a previous case, and symptoms, that allowed the epidemic to burn out.

Once everyone was quarantined, contact with an existing case was highly unlikely, testing stopped, and doctors could declare victory.

The Chinese eventually woke up and, around February 16th required confirmed cases to meet the requirements for a suspected case, as well as a positive test. They may have put this new definition into practice earlier because after a massive addition of almost 16,000 confirmed cases on February 12th, the number fell dramatically each day and, by February 18th was under 500 cases, and continued to stay low.

But other countries did not learn. Korea, Japan and Italy (and perhaps other countries) have started doing tests on people with no epidemiological link, encouraging people with the vague symptoms that are part of the definition to come to hospital to get checked, and obviously following up with anybody with a connection to them, most of whom will be asymptomatic. Consequently, in mid to late February, cases in those and other countries started to skyrocket.

A New Disease?

COVID-19 is described as a distinct new disease. But it clearly is not. There are no distinctive symptoms, for a start. Reference [2] showed that, among 41 early cases, the only symptoms found in more than half, were fever (98%) and cough (76%). 98% had CT Scan imaging showing problems in both lungs (although it is possible to have shadowing on a CT scan without symptoms). The high percentage of cases with fever and shadowing in both lungs is an artefact of the disease definition, fever and “radiographic evidence of pneumonia” are two of the diagnostic criteria for a probable case.

The low rate of people testing positive on the COVID-19 test is further evidence that there are no obvious symptoms. If there were recognizable symptoms, doctors should have a better than 3-5% chance of guessing who has the virus. While some of the people may have been tested, without symptoms, because they were on a flight or cruise, countries outside China are encouraging people with the non-specific symptoms of fever and cough to get tested, so increasingly people have symptoms of the flu or pneumonia, but are still testing negative in high numbers.

For example, as of March 9th, Korea had found 7,382 positive cases out of 179,160 people tested (4.1%) [20]. In Washington State, where they appear to be reluctant to test anyone, only 1 out of 27 tested by February 24th had tested positive (3.7%) [21]. Perhaps if they had tested all 438 who were then under quarantine, the epidemic would have exploded from 1 to about 16 cases (3.7% of 438). By March 9th, 1,246 tests had been performed in Washington with 136 found positive (11%). Obviously, in neither location can doctors recognize cases clinically.

5. Testing

Assuming, for a moment, the existence of a new coronavirus, what would a test tell us, at this stage? Or rather, what does it not tell us?

- Without purification and exposing animals to viral particles we do not know if the virus is pathogenic (disease causing). It could be an opportunistic infection (invades unhealthy people with weakened immune systems) or a passenger virus (that is carried along by risky behavior, such as eating an animal carrier of a virus).
- We don't know the false positive rate of the test without widespread testing of healthy people far from places where people are being diagnosed with this possible new disease. If the test is 99% accurate, in a city of over 10 million, like Wuhan, there would be about 100,000 false positives (1%). It is easy to generate a false epidemic if you just keep testing like this. And it is worse if you restrict the test to people with symptoms, because then the flaws in the test will not be revealed for longer.
- If someone is sick there is no proof that any or all of their symptoms are due to the virus, even if it is present. Some people may be immune, some may have some symptoms caused by the virus, but others caused by the drugs they are given, by pre-existing health conditions, and so on.
- We don't know if the people who test negative are infected or not, especially when they show up with similar symptoms. For example, in [2], out of 59 patients with similar symptoms, only 41 tested positive, but the researchers were clearly not sure whether the remaining 18 were truly uninfected. If they truly are not, they lend weight to COVID-19 *not* being the cause of any of the illnesses, as they had symptoms indistinguishable from the 41 positives.

Testing at such an early stage of knowledge is incredibly dangerous. It spreads panic, it can put people on dangerous medications, other circumstances of their treatment can be physically and psychologically damaging (such as intubation and isolation, and even seeing all the doctors and nurses in special suits emphasizing how deathly sick you are).

False Negatives – Big Problem

According to an article in the South China Morning Post [23], Li Yan, head of the diagnostic center at the People's Hospital of Wuhan University, noted on Chinese state TV that because of the multi-step process, an error at any stage could result in an incorrect outcome. This was echoed by reference [26] which noted the possibility of errors in the many steps from the time of specimen collection through processing. Wang Chen, president of the Chinese Academy of Medical Sciences, also on CCTV, said the accuracy is only 30 to 50 percent.

Wang Chen really means, however, that the test only ever produces false negatives, and never false positives. In a paper documenting a cluster of illness and positives tests in a family [3], this bias is clear, as most patients had more negative tests than positive tests, but were considered positive anyway. Patient 1 had 3/11 positive

(27%), patient 2 had 5/11 (45%), patient 3 had all 18 negative, patient 4 had 4/14 (29%), patient 5 had 4/17 (24%) and patient 7 was the only with a majority positive (64%).

The only way to decide logically and scientifically is to have a gold standard for presence of the virus, which can only be purification and characterization (identification of the RNA and proteins). Since this has never been accomplished, doctors get to make decisions on the fly, biased towards treating patients as infected.

False Positives – Best Evidence

The first major attempt to define the false positive rate was in a paper describing a new test methodology, but it has a built-in conflict of interest [19]. Clearly, if the false positive rate was high, the authors' aim to "develop and deploy robust diagnostic methodology for use in public health laboratory settings", would have failed.

They did, however, do more than most. They took 297 samples of nasal and throat secretions from biobanks and tested them, only finding "weak initial reactivity" in four samples which, upon retesting, disappeared. The problem with this kind of analysis is that biobank samples may not have been obtained in the same way as samples from live people in an epidemic panic. The sampling was also not blinded, something that is necessary to eliminate the possibility of unconscious bias (a real problem in medicine). Furthermore, many samples in people believed to be infected are negative, and multiple samples are tested, as described for the family cluster paper.

In sum, testing 297 samples could, at best, show that the false positive rate was 1/300, but because multiple samples are often taken in current COVID-19 test protocols, with any one positive sample over-ruling all the negatives, the false positive rate could be considerably less, as the biobank samples were only tested once.

And, even if this test did have a false positive rate that was very low, it is not clear that this particular test is in use, and the false positive rate cannot be extrapolated to any other test design.

Even a small false positive rate is critically important. A 99% accurate test would produce 100,000 false positives in a city of 10 million, like Wuhan. And if the number of positives in sampling is around 4% (which it appears to be from early statistics), then 1 out of 4 positives would be false.

Finally, on March 5th 2020 some Chinese scientists dropped a bombshell. According to their analysis, based on reasonable assumptions for asymptomatic people (e.g. contacts of other cases), "the false-positive rate of positive results was 80.33%".[26] This is based on a mathematical analysis using reasonable assumptions for the actual prevalence of the virus, and the performance of the test.

The best case, with the most optimistic assumptions, was still more than 40% false positives.³

Positive, Negative, Positive Again – Confusion

Some people have fully recovered from illness blamed on COVID-19, started to test negative, and then tested positive again. According to a news report [22] patients are not considered cured in China until they no longer have symptoms, have clear lungs, and have two negative COVID-19 tests. Despite this, 14% of discharged patients in Guangdong Province later tested positive, but with no relapse of symptoms. This is very difficult to explain if the test is for a virus, much easier to explain if the RNA that the test is looking for is not viral in origin. Later analysis showed similar results in Wuhan, with 5-10%

Other confusing test results are listed in Appendix A.

Negative, Negative, Negative

A group of doctors in Marseille, France, working in a very experienced lab, that regularly does testing for respiratory viruses, reported testing 4,084 samples for COVID-19, using several systems approved for use in Europe, without a single positive [25]. This included 337 people returning from China who were tested twice, and 32 people referred because of suspected infection.

It is statistically improbable that this lab was just lucky to not get any COVID-19 cases, it is more likely that they used more stringent criteria, illustrating that the performance of not just test kits, but labs, with this new test, is completely unknown. Yet, a positive test remains unquestioned in every case.

Preserve the test

Overall, it seems that test results must be interpreted to preserve the coronavirus theory. No alternative interpretation is allowed. And when there is an inconsistency, it must be ignored or explained away, often invoking imaginary data. These situations are listed in Appendix C.

Test Experience

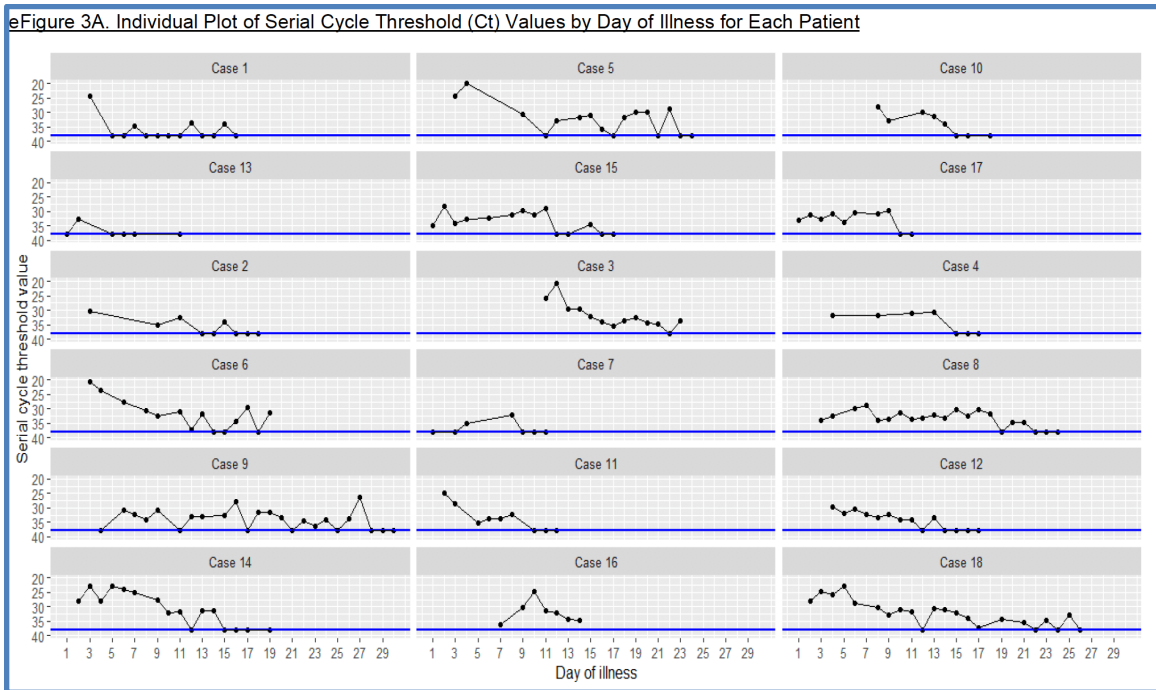
A paper from Singapore by doctors and public health officials provides a revealing look at the inner guts of COVID-19 testing. Hidden away in the supplementary material of reference [24], where few people will see it, it exposes some important issues with tests:

- The test is not binary (negative/positive) and has an arbitrary cutoff.
- The quantity of RNA does not correlate with illness.
- If negative means uninfected and positive means infected, then people went from infected to uninfected and back again, sometimes several times.

³ The abstract was eventually withdrawn, but without any explanation, indicating it was a political removal. The original Chinese language article was not retracted by the journal. This may be the first time ever that an abstract alone has been withdrawn.

- Results below the cutoff are not shown, and are treated as negative, but if PCR continued past the cutoff and was eventually positive, this would indicate presence of small quantities of the RNA which is supposedly unique to COVID-19 (i.e. infection).

Before you read beyond the following figure, ask yourself why the first 6 graphs, shown deliberately out of numerical order, are separated. What are the visual differences between those 6 and the remainder? Do this right away so my interpretation does not bias your opinion.



The Test is Not Binary

Tests for infections are usually reported as positive or negative (sometimes 'reactive' and 'unreactive'). One of the reasons for this is that, in many cases, multiple tests are required, and it is common to conclude that someone is infected even with some negative tests and that someone is uninfected even with some positive tests. The results of a complex multi-test algorithm are also usually reported as positive or negative, but interpreted by doctors and patients as infected or uninfected. The former could mean isolation, special medications, special precautions for health care workers and more.

But, in reality even individual tests are not binary, not positive or negative, but a range of numbers that are arbitrarily divided into positive on one side and negative on the other. Possibly there is a grey area that allows other factors, including the bias of the doctor or laboratory, to enter into the interpretation, or that will require further testing.

Understanding RT-PCR

Before we continue it is important to understand what RT-PCR, the test technology is. It is based on PCR (Polymerase Chain Reaction), a DNA manufacturing technique invented by the iconoclastic Kary Mullis, who received a Chemistry Nobel for it in 1993. It is one of the most important technologies invented since the rise of the biotech industry in the 1980s. Starting with one DNA strand, the strand is cleaved (split in two) and then complementary strands are allowed to grow, the same process that occurs in a cell during mitosis (cell division).

So far, not so impressive, but through the magic of doubling, if this process is repeated 10 times you will have about 1,000 identical strands of DNA. Twenty times, a million (2^{20}). Thirty times, a billion (2^{30}). Forty times, a trillion (2^{40}). Each round of doubling is referred to as a cycle.

To use (or abuse) PCR as a test, you assume that you are starting with an unknown number of strands and end up with an exponential multiple after n cycles. From the quantity of materials at termination the starting quantity can be estimated. A major problem with this is that because PCR is an exponential (doubling) process, errors also grow exponentially. In reality, the starting quantity is often not estimated, but the optical density, or another characteristic, of the growing pile of DNA, can be determined.

Another problem with many viruses, like coronaviruses, is that they are believed to be composed of RNA, but this can be solved by converting all RNA into DNA with the Reverse Transcriptase enzyme at the start of the process.

The technology, after these two adaptations, is known as RT-PCR (Reverse Transcriptase PCR).

Now you have the information necessary to understand the numbers from 20-40 on the vertical axis of the graphs above. These are the number of cycles. It implies that it always took at least 20 PCR cycles before any RNA could be detected, and they stopped after a maximum of 37 cycles. The blue line is at cycle 38, and the black dots do not mean RNA was detected after 38 cycles (as clarified in the paper), but that it wasn't detected by 37 cycles, and so the process terminated. This "Serial Cycle Threshold (Ct)" was the arbitrary definition of a negative result by the authors of reference [24].

We can see that it was arbitrary, because in another paper, reference [13], the authors had two end points: 37 and 40. Anything less than 37 was considered positive and anything 40 or greater was defined as negative. The in-between values of 38 and 39 resulted in re-testing. Note that this paper would treat 37 as indeterminate but the Singapore paper would treat it as positive.

RNA Quantity does not Correlate with Illness

Theoretically the PCR cycle number at which DNA is detectable tells us the relative quantity of RNA. Whatever initial amount was necessary to be detectable on the 20th cycle, 21 cycles would be doubly sensitive, and could detect about half as much, and

30 cycles about 1000th as much as 21. One could therefore expect sicker people to have more virus, and thus to have a *lower* cycle number on testing.

This is the reason the authors separated out the first six graphs from the remaining twelve. The first six were the people who were sick enough to require oxygen. But one can clearly see from the graph that the six sicker people did not have distinctly higher quantities of RNA.

Positive to Negative and Back Again

The majority of the 18 patients had a positive test, followed by a negative test, followed by a positive test. Some had this several times.

If a negative test means uninfected, then this is impossible. You cannot rid yourself of the virus, and then be re-infected the next day, and then infected the day after, and then become uninfected again. Or, if rapid re-infection is possible in a hospital setting, then the virus must be simply everywhere and fighting it is totally useless.

The simplest answer to this conundrum is that negative tests do not mean uninfected. But the corollary is that positive tests do not mean infected. Which would make the test worthless.

Results Below the Cutoff

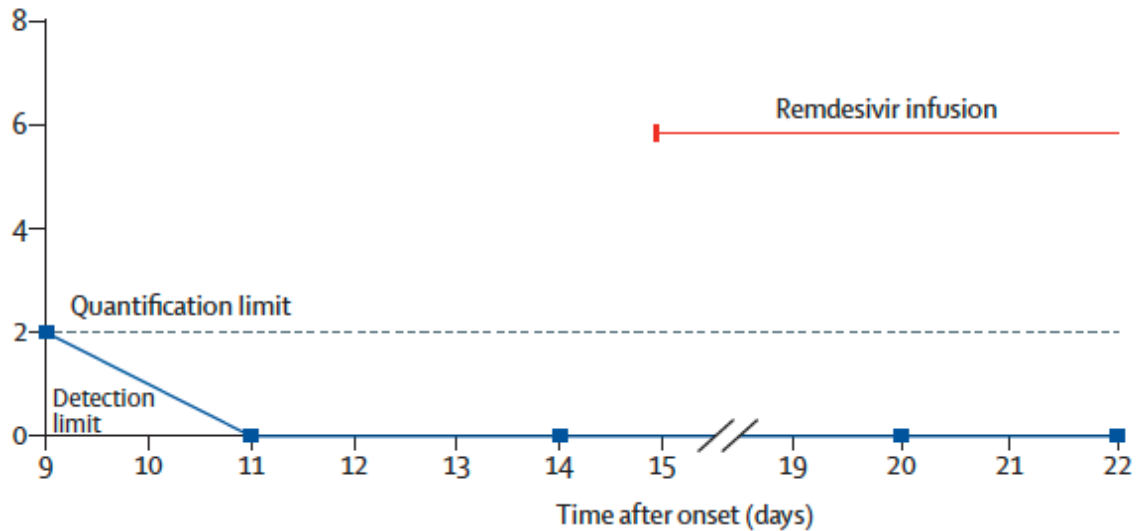
The authors of reference [24] apparently programmed the PCR machine to stop after 37 cycles if no DNA had been detected. This means that we don't have information on when or if the process would have terminated if it had been allowed to continue for many more cycles. More importantly, what would it mean if DNA was detected on cycle 38 or 40 or 80? If the RNA (complementary to the DNA used in PCR) is unique to the virus there is no other possible interpretation than that the person is infected. But it is possible that everyone would eventually detect enough material, which could only be interpreted as the corresponding RNA being endogenous (i.e. formed within the cells of the human body).

Given that several people bounced back from negative to positive again, one could argue that the cutoff should be more (or maybe less) than 37 cycles. But likely if this was done many more people might test positive, and even with a cutoff of, say, 40, going to negative and back again might still occur.

Symptoms Below the Cutoff

Another paper that contains a series of frequent tests, 1-5 days apart, for five European patients, showed that the PCR result (expressed in this case as estimated number of copies of RNA), went to undetectable (usually interpreted as negative or 'uninfected') 3 to 11 days before the cessation of symptoms, implying that the virus was causing illness when it wasn't present [47]. Following is the graph of a patient with symptoms serious enough to justify prescription of the antiviral drug Remdesivir, who was COVID-19 negative ('uninfected') for 11 days before symptoms resolved. PCR testing is ultra-sensitive, so it is hard to sustain the idea that the virus was still present.

B Patient 2



6. Transmission

There is lots of evidence that the virus is not as transmissible as is being implied.

(January 2) “27 (66%) [of 41 early] patients had direct exposure to Huanan seafood market [i.e. about 1/3 did not]”. [2].

(January 1-20) “Of the 99 patients with 2019-nCoV pneumonia, 49 (49%) had a history of exposure to the Huanan seafood market.” [10] [i.e. 51% did not]

(January 1-January 22) A larger survey, including all the first 425 cases, showed that of those diagnosed January 1st or later, 72% had “No exposure to either market or person with respiratory symptoms”. [13]

“The symptom onset date of the first patient identified was Dec 1, 2019. None of his family members developed fever or any respiratory symptoms. No epidemiological link was found between the first patient and later cases.” [2]

(of the family cluster) “None of the family members had contacts with Wuhan markets or animals...They had no history of contact with animals, visits to markets including the Huanan seafood wholesale market in Wuhan, or eating game meat in restaurants.” [3]

(March 3) “Nearly 80% of patients with the new coronavirus in Japan have not passed on the infection to others regardless of the degree of their symptoms, a government panel of experts announced on March 2.” [43]

Transmission 1 – The Shenzhen Family Cluster

Reference [3] attempts to show the ease with which the virus could be transmitted in a family that travelled from Shenzhen, near Hong Kong, to Wuhan in December, and then back again about a week later.

Two grandparents (patients 1 and 2), the daughter and son-in-law (patients 3 and 4), a 10-year old grandson and a 7-year old granddaughter (patients 5 and 6) flew to Wuhan on December 29th. On the first day, the grandmother (1) and her daughter (3) visited a baby boy with pneumonia, known as Relative 1, in a hospital in Wuhan (the hospital is not named, but the implication is that this child had this new disease). Outside of this they mingled with four other local relatives, of which two had also spent extensive time in the hospital. Notably the infant’s symptoms resolved one or two days after the visit, and he returned home.

On day four of the visit (January 1st), the son-in-law, who had not gone to the hospital got sick. On this basis, they declared that COVID-19 had a very short incubation time, and that people were almost immediately infectious. There’s no evidence for this, except nothing else can support their hypothesis that the hospitalized baby had COVID-19, infected Patients 1 (grandmother) and 3 (daughter), one of which then infected the son-in-law (Patient 4). All in four days.

Then, like dominoes, the other visitors got sick, the daughter one day after her husband (Jan 2), the grandmother the next day (Jan 3), and then the grandfather and

Relatives 2, 3, 4 and 5 (Jan 4). The family appeared to have a history of being frequently ill. In this case symptoms were mostly fever, cough and weakness.

On January 4th the whole family returned to Shenzhen. Note that the grandchildren, patients 5 and 6, had no symptoms during their time in Wuhan, or after returning home.

On January 9th, the grandparents and their daughter went to a clinic in Shenzhen, and the next day the grandparents visited the big hospital (University of Hong Kong-Shenzhen Hospital) for tests. The daughter followed one day later (January 10th).

The grandparents had significant pre-existing health conditions, such as having been treated for brain cancer (grandmother) and hypertension (both). In Wuhan they both suffered from fever, dry cough, weakness, and later were found to have various lab abnormalities. They were genuinely sick.

Concern that they were infected with COVID-19 is probably the reason why the rest of the family were brought in over the next few days for testing. The daughter and son-in-law were still sick (diarrhea, congestion, sore throat, chest pain) but by then had a normal body temperature (actually lower than 37C). They did have some lung opacities on a CT scan, so were diagnosed with pneumonia despite the normal temperature.

The grandson had been a bad boy (patient 5) and had refused to wear a mask in Wuhan, so the parents insisted he get a CT scan. Despite the complete lack of symptoms, he also had lung opacities, and so was also diagnosed with pneumonia, albeit completely asymptomatic.

The granddaughter was a good girl (patient 6), and had worn a mask, and so nobody was surprised that she was not only asymptomatic, but also did not have lung abnormalities.

All six patients (apparently including patient 6 who was healthy in all ways) were tested using the new RNA test. Not surprisingly, the grandparents tested positive on nose swabs and serum samples. The son-in-law tested positive on nose and throat samples. But the daughter, Patient 3, despite doing 18 tests, more than anyone else, stubbornly tested negative on each one. But, showing shocking bias, the authors concluded, “she was still regarded as an infected case because she was strongly epidemiologically linked to the Wuhan hospital exposure and radiologically showing multifocal ground-glass lung opacities.” Another indication of bias was the omission of test results for Patient 6, who also tested similarly tested negative every time (but based on only four samples, according to personal correspondence from the authors). In this case the bias was clearly to classify her as uninfected.

The bad grandson (patient 5) also tested positive on nose, throat and sputum samples, despite having no symptoms of illness.

Additionally, there was a relative who did not travel to Wuhan (Patient 7), who got sick with back pain and weakness four days after everyone returned to Shenzhen and, when she was tested, she also tested positive for RNA (nose, throat and sputum).

Several of the relatives who lived in Wuhan also got sick afterwards, but no COVID-19 test information was provided in this paper.

No consideration was given to other causes for illness, such as exposure to food contaminated by chemicals, food that was prepared in anticipation of their visit, that was left out too long, or in unsanitary conditions. The purpose of reference [3] appears to have been to prove that the putative COVID-19 is infectious, not to try to disprove it (which is what good scientists should do). Note that the relatives visited each other a lot over a few days, that was indeed the purpose of the trip, and one can guess that they ate more than usual, ate richer and more exotic foods (but not exotic animals) and perhaps drank more than usual. But none of this was investigated.

Transmission 2 – The German Connection

Reference [9] attempts to connect the illness of some Germans, one of whom met with a Chinese woman, who afterwards was diagnosed positive on the RNA test.

The sequence of events started between January 20th and 22nd when a woman from Shanghai and a local German were in meetings together. Both were healthy at the time. The woman flew back to China on January 22nd and started to feel sick on the flight home. The German also got sick (sore throat, chills, muscle pain, fever, cough), late on the 24th, and did not return to work until the 27th. By coincidence, this was the same day that the Shanghai woman informed the German company that she had been sick and had tested positive for COVID-19 RNA. By this time the German man had recovered without any special medicines or interventions, but he tested positive, and so did three other colleagues who had contact with him, or the Shanghai woman, or both. It is logical that everyone who had any contact with them was tested, and likely no employees who did not have contact were tested. The paper does not say how many tested negative, and whether any of those testing negative had similar symptoms.

The article claims that all four Germans had symptoms starting on the 24th, 26th, or 27th, but what those symptoms were is not detailed for three not in the meeting with the Chinese woman. The article does note that, “so far, none of the four confirmed patients show signs of severe clinical illness”.

If the purpose of the paper was to support the idea that this illness is transmissible, it is important to accept the four positive tests on Germans as true positives, despite the fact that none of them had “severe clinical illness”. This, however, calls into question the severity of the illness, and why heroic and dangerous medical measures are needed. Because the Germans did not find out about their positive RNA test until after their period of symptoms, they probably only had to suffer quarantine, and not antiviral drugs, steroids or invasive respiratory assistance, which might have happened if they had shown up at an emergency department with symptoms and had been diagnosed with COVID-19 at the same time.

An alternative explanation is that COVID-19 is deadly, but that these four Germans represent four false positive tests. If this is the case, the usefulness of the test must be questioned.

Note that the fact that all the people with positive tests and symptoms had contact is not surprising if testing was limited to people who had contact.

Transmission 3 – Illinois Couple

A paper in Lancet made a big deal about the presumed first case of person-to-person contact in the USA, from a woman who had visited Wuhan in December 2019, to her husband, who had stayed in the United States. She got sick after returning, and later both her and her husband, who had not travelled to Wuhan, tested positive for COVID-19 [31]. Whether he had symptoms or not was impossible to tell because he had chronic obstructive pulmonary disease, so had a cough and difficulty breathing all the time. What is more interesting is that authorities identified 372 contacts of this couple, and “were able to assess exposure risk and actively monitor symptoms for 347”. Not one of these people had an emergency room visit with respiratory symptoms within 14 days of contact with the couple. 43 did have some symptoms that could have been COVID-19, and became “Persons Under Investigation” (PUIs). 26 had had exposures to the couple classified as “medium risk or greater”. But despite the presence of symptoms, contact with the couple, and close monitoring, not one tested positive for COVID-19.

Transmission 4 – Diamond Princess [33]

The Diamond Princess cruise ship was a perfect laboratory for watching a highly infectious pathogen in action. The first person who tested positive had symptoms before boarding the ship on January 20th. It was not until February 1st that they tested positive, and February 3rd when passengers were confined to their quarters, in some cases with someone who tested positive. Passengers had interactions with the crew, e.g. to obtain meals. Despite this, the rate of transmission was only 16.7%, meaning that 83.3% remained negative. Since almost half those who tested positive had no symptoms it was not possible to avoid contact with positive persons based on observing symptoms, and it meant that 92% emerged from quarantine without having experienced symptoms due to COVID-19.

Transmission 5 – Magical

Numerous newspaper articles have noted cases outside China (where individual cases were still newsworthy) that had no known contact with another case, or travel to an endemic region (notably Wuhan). These are document in Appendix B.

Proving Transmission

It is impossible, in most cases, to prove that someone did have contact with another COVID-19 case, even if they did travel to Wuhan and visit the Huanan market. In the best case it will be possible to show that someone was in the vicinity of someone who tested positive earlier, but that does not constitute proof that they were exposed to the virus, let alone that it was that person who infected them. In most cases, even if someone was in Wuhan, there will be no evidence that a person was in contact with another victim.

Fundamentally, this belief that it is contact that causes positive tests is necessary to preserve the infectious paradigm. Therefore, the slightest evidence of an association between an old case and a new case (such as having been in the same city at the same time) is taken as proof of transmission, when it is obviously not.

7. Treatment

Treatment for the putative novel coronavirus, COVID-19, is following the same pattern as for SARS. Apart from standard treatment for respiratory conditions, there is a tendency towards providing oxygen to patients more aggressively (e.g. intubation), the use of high dose corticosteroids (e.g. methylprednisolone) and a variety of antiviral medications.

SARS Experience

This did not work out well for SARS. As a report, commissioned by a WHO expert panel after SARS was over, said,

“Despite an extensive literature reporting on SARS treatments, it was not possible to determine whether treatments benefited patients during the SARS outbreak. Some may have been harmful...Of patients treated with ribavirin, 49/138 to 67/110 (36%–61%) developed haemolytic anaemia [breakdown of red blood cells], a recognised complication with this drug, although it is not possible to rule out the possibility that SARS-CoV infection caused the haemolytic anaemia, as there is no control group. One study noted that over 29% of SARS patients had some degree of liver dysfunction indicated by ALT levels higher than normal, and the number of patients with this complication increased to over 75% after ribavirin treatment...In the Chinese literature, we found 14 reports in which steroids were used. Twelve studies were inconclusive and two showed possible harm. One study reported diabetes onset associated with methylprednisolone treatment. Another study (an uncontrolled, retrospective study of 40 SARS patients) reported avascular necrosis and osteoporosis among corticosteroid-treated SARS patients [which resulted in many joint replacements, particularly in Hong Kong]” [7].

Drugs for COVID-19

For SARS the antiviral drug ribavirin was dominant, but for COVID-19, a wider variety of antivirals were proposed at the beginning of the panic, and now it has expanded beyond just antivirals to anti-malaria and rheumatology drugs. The choice of drugs is a shot in the dark as, “*There are no proven therapies for the prevention or treatment of COVID-19. All agents have the possibility of associated harm*” [40]:

- Flu drug oseltamivir (Tamiflu) [2]. Use was described as “empirical”, based on intuition, not science. Usage in China was also reported in [10].
- AIDS drug combination Kaletra, composed of protease inhibitors Lopinavir and Ritonavir, has been fairly widely used. A Chinese hospital noted that the choice was because the drug was “already available in the designated hospital” [2]. Usage in China was also reported in [10] and in Singapore in [24]. On March 18th Chinese researchers published an article declaring their clinical trial a failure, noting that the drug was, “*not associated with clinical improvement or mortality in seriously ill patients with Covid-19 different from that associated with standard care alone.*” [38]

- Cytomegalovirus drug Ganciclovir (Cytovene) was also reported in China by [10].
- Early in February the Chinese government announced a trial of Gilead's Ebola antiviral Remdesivir, on the basis that it, "may have helped alleviate the symptoms of a 35-year-old male" diagnosed with COVID-19 infection in the US [15]. The drug was going to be trialed on 270 people, although it is not clear whether there will be a placebo or comparison group. A Chinese chemistry professor, Jiang Xuefeng, warned, "*No random, controlled, or blank samples were used in [its previous use in one American man]...The effectiveness of remdesivir cannot be determined by this single case...It can take years to fully understand the pharmacological and toxicological side effects of new drugs*" [15]. Reference [28] admits that, "*randomized and controlled trials are still needed to determine the safety and efficacy of remdesivir.*" Some of those trials are happening at 12 centres in Italy [35].
- A Japanese hospital used the anti-influenza medication Avigan (Favipiravir) on one patient, it was given to 70 patients in Shenzhen, China [30], and is being tested in Italy as well [35].
- A review of treatments in China, published mid-February, also revived the use of Ribavirin despite admitting lack of effectiveness and "*significant toxicity*". But perhaps, they hypothesized, it would be useful combined with other drugs [28]
- Nelfinavir is another AIDS protease inhibitor, mentioned in [28].
- Arbidol is a Russian anti-influenza drug, mentioned in [28].
- Nitric oxide inhalation is also mentioned in [28].
- There is much excitement about the anti-malaria drugs chloroquine, and the less toxic hydroxy-chloroquine. Neurological side effects, sometimes permanent, are the most worrying side effect of this family of drugs.
- Russia promoted a related malaria drug, Mefloquine (Lariam), even though this has a well documented risk of serious neurological side effects, often permanent. <https://www.rt.com/russia/484364-russian-drug-treatment-covid19/>
- Tocilizumab (Actemra), a rheumatoid arthritis drug from Roche, is also being tested in Italy [35]. It blocks immune system protein interleukin-6 (IL-6) and is considered immunosuppressive.
- Siltuximab, a similar rheumatoid arthritis drug, is also under consideration.
- Sarilumab (Kevzara) from Regeneron and Sanofi, another IL-6 inhibitor, is also entering a clinical trial. <https://www.healio.com/rheumatology/rheumatoid-arthritis/news/online/%7B1957db6e-f7a2-4e5d-939e-d4b5964b2dd3%7D/sarilumab-enters-clinical-trial-for-covid-19-spotlighting-key-role-for-il-6>

These drugs are sometimes described as "experimental", but that is a misnomer, and disguises the fact that they are not used in the context of science. It is clearly not science when there is no placebo, no blinding, and no randomization. It is likely that sicker patients will be prescribed untested drugs, if they have a health decline it will be blamed on the virus, and nobody could know what would have happened if they had received standard medical treatment for their symptoms. If the patient survives

it will likely be considered a success, and is worth millions, or more, in public relations to an antiviral drug that has not yet found a market.

Drug Usage

93% of 41 confirmed Chinese COVID-19 cases in [2] received Oseltamivir, and future use of Kaletra was planned. 75 of 99 patients, also in China, received unspecified antivirals [10]. 52% of 2,003 COVID-19 positive people who died in Italy had been prescribed (unspecified) antivirals [32].

Invasive Ventilation⁴

Patients with respiratory illnesses like pneumonia often have difficulty getting enough oxygen into their blood (oxygenation). This is because there is a reduced amount of lung tissue (alveoli) available for gas exchange, perhaps because it is disabled by the collection of fluids and pus or inflammation. When a patient is found to have low oxygen levels or signs of respiratory distress (such as rapid, shallow breathing sweating or grogginess) providing more oxygen is required. There are increasing levels of oxygenation support that can be given, with increasing risk:

1. Tubes to the nose (cannulas) that deliver air richer in oxygen.
2. Oxygen masks can provide higher levels of oxygen.
3. Intubation, inserting a tube down the throat to the lungs.

The last method, which is known as invasive ventilation, has significantly greater risks. After SARS an analysis of data in Hong Kong compared one hospital that started patients with non-invasive ventilation to 13 that immediately went to intubation for SARS [36]. Despite this one hospital receiving significantly sicker patients, their death rate was more than four times lower, and there were no instances of transmission of SARS to health care workers.

One problem with intubation is the cluster of issues known as VALI – Ventilator Association Lung Injury [45]. Another is Ventilator Associated Pneumonia (VAP). While most patients already have pneumonia, this problem could introduce new pathogens. Risk factors relevant to COVID-19 patients include chronic disease, previous antibiotic therapy and hospitalization for over 5 days [39].

Invasive ventilation can also be traumatic, with patients experiencing, “unreal experiences...often associated with intense fear” [40]. Care by nurses and relatives can reduce this fear, but when relatives are barred from the bedside, and nurses are cloaked in personal protective gear, there may be no comforting face or hand-holding available.

It appears that concerns about invasive ventilation from the SARS era are being ignored. In the UK, an analysis of 196 patients showed that 75% were intubated within 24 hours of admission [37]. One reason is that the UK government is strongly advising sick people to stay home and self-isolate (“Do not leave home if you or someone you live with has either: a high temperature a new, continuous cough”)

⁴ Written with the assistance of FA Khan, MD, FACEP, FAAEM [44].

and to not go to an emergency room until their symptoms worsen. This could lead to people with early, easily treated pneumonia, waiting several days, at which point their pneumonia is much more advanced and may require intubation. This is not to advocate that people should go to an ER for any snuffle or slight fever, but the pendulum may have swung too far the other way, with the minority of people whose cold or flu symptoms do not resolve in two or three days waiting too long to get help.

A second reason for intubation is the fear of infection of health care workers or other patients with non-invasive ventilation, despite that fear being unfounded with SARS. In the UK, advice is based on this fear, therefore, “a low threshold should be applied to early intubation and mechanical ventilation” [49]. In Australia and New Zealand, “Early intubation should be considered to prevent the additional risk to staff of emergency intubation and to avoid prolonged use of high flow nasal oxygen or non-invasive ventilation” [50]. And a review of experiences in Italy stated that, “Invasive ventilation is associated with reduced aerosolisation and is thus safer for staff and other patients”, but also admitted that, “it might also be associated with hypoxia, haemodynamic failure and cardiac arrest during tracheal intubation” [51].

Problems with intubation can occur due to improper insertion of the tubes causing internal damage (perhaps because the patient is not completely sedated), and due to secretions from the mouth, upper airways or even stomach entering the lungs. The procedure is harder on patients with a weaker constitution due to age or pre-existing health conditions. And problems may be exacerbated by the use of other powerful drugs, such as those being proposed and used for coronavirus treatment. Sufficient trained staff are also needed to constantly monitor and care for the immobilized patients, and to be able to properly extubate them (remove the tube) if oxygen levels go back up again.

If damage from invasive ventilation occurs, it will be almost impossible to differentiate it from worsening of the underlying lung problem, so the deterioration may be ascribed to the wrong cause.

Patient Status

Part of the concern with the use of antiviral drugs is that for this epidemic panic the patients are older and weaker than the average person. For example, “The average age of the patients was 55.5 years, including 67 men and 32 women” [10]. Only about 12% of the Chinese population are 55 or over [11]. In a later study [13], the median age was 59, and only about 10% of Chinese are this age or older. In the last of three time periods of this study, January 12th through 22nd, the median age had crept up to 61.

The patients were also weaker. For example, “50 (51%) patients had chronic diseases, including cardiovascular and cerebrovascular diseases, endocrine system disease, digestive system disease, respiratory system disease, malignant tumour, and nervous system disease” [10].

In Italy, the average age of 2,003 analyzed deaths was 80, and over 99% of the 355 cases for which this information was available had serious pre-existing health conditions (76% had hypertension, and smaller quantities had diabetes, other heart conditions, recent cancer, kidney failure, COPD, stroke, dementia and chronic liver disease) that could have explained the deaths [32]. 49% had over three conditions, 26% had two and 25% had one. Only three of the deceased (<1%) had no chronic underlying condition. The higher age and greater frequency of pre-existing conditions in Italy is probably because they were reporting on deaths, not patients.

Combine old age, pre-existing health conditions, pneumonia, invasive ventilation and powerful drugs, and you have a recipe for another iatrogenic disaster.

Treatment experience

We do not have much precise documentation of experiences with the antiviral drugs, this tends to come out after an epidemic is over, when doctors have time to go through the copious records that will be taken, and see if they can determine whether the treatments had any impact on the markers of the disease or on the health of the patient. Since it is almost certain that there was no control, it will be impossible to distinguish between a patient who recovered on their own despite the treatment, and one who was saved by the treatment. However, useful information on adverse events and disease markers can be obtained.

The first report of treatment experience that I am aware of came from Singapore [24]. They reported on 18 patients, of which only five received antiviral medications, chosen from six sickest patients, who required supplemental oxygen.

The doctors used the AIDS drugs Lopinavir and Ritonavir, often marketed as the combination pill Kaletra. For two of the patients they reported a reduction of oxygen requirements within 3 days, and for two they started to get negative coronavirus tests (not the same two). So far, so good, although it is impossible to claim this is due to the drugs, and it was only a minority of the patients.

The bad news is that two patients, “deteriorated and experienced progressive respiratory failure while receiving lopinavir/ritonavir, with 1 requiring invasive mechanical ventilation”. And these two patients continued to produce positive coronavirus tests. Furthermore 3 out of 5 patients “developed abnormal liver function test results” and 4 out of 5, “developed nausea, vomiting, and/or diarrhea”. In total, only one of the five was able to complete the planned 14-day course of antiviral drugs.

It is of course not possible to prove that the drugs produced the side effects or worsening of health that is seen, as a control is impossible during an epidemic panic. However, when the condition of the patients includes known side effects of the drugs prescribed, it is reasonable to infer that they are caused by the drugs.

8. Conclusions

The coronavirus panic is just that, an irrational panic, based on an unproven RNA test, that has never been connected to a virus. And which won't be connected to a virus unless the virus is purified. Furthermore, even if the test can detect a novel virus the presence of a virus is not proof that it is the cause of the severe symptoms that some people who test positive experience (but not all who test positive). Finally, even if the test can detect a virus, and it is dangerous, we do not know what the rate of false positives is. And even a 1% false positive rate could produce 100,000 false positive results just in a city the size of Wuhan and could mean that a significant fraction of the positive test results being found are false positives.

The use of powerful drugs because doctors are convinced that they have a particularly potent virus on their hands, especially in older people, with pre-existing health conditions, is likely to lead to many deaths. As with SARS.

There is very little science happening. There is a rush to explain everything that is happening in a way that does not question the viral paradigm, does not question the meaningfulness of test results, and that promotes the use of untested antiviral drugs. And, given enough time there will be a vaccine developed and, for some of the traumatized countries, it may become mandatory, even if developed after the epidemic has disappeared, so that proving that it reduces the risk of developing a positive test will be impossible.

9. References

1. Zhu N et al. A Novel Coronavirus from Patients with Pneumonia in China, 2019. *N Engl J Med*. 2020 Jan 14. <https://www.nejm.org/doi/full/10.1056/NEJMoa2001017>
2. Huang C et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020 Jan 24. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30183-5/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30183-5/fulltext)
3. Chan J F-W et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *Lancet*. 2020 Jan 24. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30154-9/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30154-9/fulltext)
4. Rivers TM. Viruses and Koch's Postulates. *J Bacteriol*. 1937 Jan; 33(1): 1-12. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC545348/>
5. Gluschkof P et al. Cell membrane vesicles are a major contaminant of gradient-enriched human immunodeficiency virus type-1 preparations. *Virology*. 1997 Mar 31; 230(1): 125-133. <http://davidcrowe.ca/SciHealthEnv/papers/277-Microvesicles-Gluschkof.pdf>
6. Bess JW et al. Microvesicles Are a Source of Contaminating Cellular Proteins Found in Purified HIV-1 Preparations. *Virology*. 1997 Mar 31; 230(1): 134-44. <http://davidcrowe.ca/SciHealthEnv/papers/278-Microvesicles-Bess.pdf>
7. Stockman LJ et al. SARS: Systematic Review of Treatment Effects. *PLoS Med*. 2006 Sep 12; 3(9). <http://davidcrowe.ca/SciHealthEnv/papers/5253-SARS-Treatment-Effects.pdf>
8. Fourth case of novel coronavirus confirmed in Canada. *Globe & Mail*. 2020 Jan 31. <https://www.theglobeandmail.com/canada/article-fourth-case-of-novel-coronavirus-confirmed-in-canada/>
9. Rothe C et al. Transmission of 2019-nCoV Infection from an Asymptomatic Contact in Germany. *N Engl J Med*. 2020 Jan 30. <https://www.nejm.org/doi/full/10.1056/NEJMc2001468>
10. Chen N et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet*. 2020 Jan 30. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30211-7/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30211-7/fulltext)
11. Population pyramid for China. <https://www.populationpyramid.net/china/>
12. Kim C-R. Three Japanese evacuees from Wuhan test positive for virus, two had no symptoms. *Reuters*. 2020 Jan 29. <https://www.reuters.com/article/uk-china-health-japan/three-japanese-returnees-from-wuhan-test-positive-for-coronavirus-nhk-idUKKBN1ZT02K>
13. Li Q. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus–Infected Pneumonia. *N Engl J Med*. 2020 Jan 29. <https://www.nejm.org/doi/full/10.1056/NEJMoa2001316>
14. Singapore confirms first cases of local coronavirus transmission: What we know about the 6 new cases, *Health News & Top Stories*. *The Straits Times*. 2020 Feb 4. <https://www.straitstimes.com/singapore/health/singapore-confirms-first-cases-of-local-coronavirus-transmission-what-we-know-about>
15. Haiyun W. China To Begin Testing Ebola Drug on Coronavirus Patients. *Sixth Tone*. 2020 Feb 3. <https://www.sixthtone.com/news/1005155/china-to-begin-testing-ebola-drug-on-coronavirus-patients>
16. Global Surveillance for human infection with novel coronavirus (2019-nCoV): Interim guidance. WHO. 2020 Jan 31. [https://www.who.int/publications-detail/global-surveillance-for-human-infection-with-novel-coronavirus-\(2019-ncov\)](https://www.who.int/publications-detail/global-surveillance-for-human-infection-with-novel-coronavirus-(2019-ncov))
17. Diagnosis and treatment: COVID-19 prevention and control. *China CDC*. 2020 Feb 16. <http://www.chinacdc.cn/en/COVID19/202002/P020200217499154038416.pdf>
18. Countries/areas with reported cases of Coronavirus Disease-2019 (COVID-19). *CHP*. 2020 Feb 22, 27. [This is a regularly updated page, and the PDF file will change] https://www.chp.gov.hk/files/pdf/statistics_of_the_cases_novel_coronavirus_infection_en.pdf
19. Corman VM et al. Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR. *Euro Surveill*. 2020 Jan; 25(3). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6988269/>
20. Korea Coronavirus Cases. *KCDC*. 2020 Feb 25-27 [accessed]. <https://www.cdc.go.kr/board/board.es?mid=a30402000000&bid=0030>

21. Novel Coronavirus Outbreak 2020. Washington State Department of Health. 2020 Feb 24 [accessed]. <https://www.doh.wa.gov/Emergencies/Coronavirus>
22. Koop F. A startling number of coronavirus patients get reinfected. ZME Science. 2020 Feb 26. <https://www.zmescience.com/science/a-startling-number-of-coronavirus-patients-get-reinfected/>
23. Feng C et al. Race to diagnose coronavirus patients constrained by shortage of reliable detection kits. South China Morning Post. 2020 Feb 11. <https://www.scmp.com/tech/science-research/article/3049858/race-diagnose-treat-coronavirus-patients-constrained-shortage>
24. Young BE et al. Epidemiologic Features and Clinical Course of Patients Infected With SARS-CoV-2 in Singapore. JAMA. 2020 Mar 3. <https://jamanetwork.com/journals/jama/fullarticle/2762688>
25. Letter to the editor: Plenty of coronaviruses but no SARS-CoV-2. Eurosurveillance. 2020 Feb 27. <https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.8.2000171?fbclid=IwAR1vaTgICfc15rO6mkI9OpBb45j1EnT87KA5p9gcfnixqSciJWSFeQb4j5l>
26. Zhuang GH et al. [Potential false-positive rate among the 'asymptomatic infected individuals' in close contacts of COVID-19 patients]. Zhonghua Liu Xing Bing Xue Za Zhi. 2020 Mar 05; 41(4): 485-488. Chinese full text: <http://html.rhhz.net/zhlxbx/017.htm> English translation: <http://theinfectiousmyth.com/articles/ZhuangFalsePositives.pdf>
27. Confirman nuevo caso de contagio del coronavirus causante de Covid-19 [New case of coronavirus confirmed]. Granma. 2020 Mar 12. <http://www.granma.cu/cuba-covid-19/2020-03-12/covid-12-03-2020-21-03-51>
28. Zhang L et al. Potential interventions for novel coronavirus in China: A systematic review. J Med Virol. 2020 Feb 13. <https://onlinelibrary.wiley.com/doi/full/10.1002/jmv.25707>
29. Lei J et al. CT Imaging of the 2019 Novel Coronavirus (2019-nCoV) Pneumonia. Radiology. 2020 Jan 31. <https://pubs.rsna.org/doi/10.1148/radiol.2020200236>
30. Zhou C et al. Coronavirus: experimental treatments give hope as China death toll hits 1,523. South China Morning Post. 2020 Feb 15. <https://www.scmp.com/news/china/society/article/3050773/coronavirus-hubei-reports-2420-new-cases-and-139-additional>
31. Ghinai I et al. First known person-to-person transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in the USA. Lancet. 2020 Mar 13. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30607-3/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30607-3/fulltext)
32. Report sulle caratteristiche dei pazienti deceduti positivi a COVID-19 in Italia Il presente report è basato sui dati aggiornati al 17 Marzo 2020 [Report on the characteristics of deceased people positive for COVID-19 in Italy as of March 17, 2020]. ISS. 2020 Mar 17. https://www.epicentro.iss.it/coronavirus/bollettino/Report-COVID-2019_17_marzo-v2.pdf English: https://www.epicentro.iss.it/coronavirus/bollettino/Report-COVID-2019_20_marzo_eng.pdf
33. Russell TW et al. Estimating the infection and case fatality ratio for COVID-19 using age-adjusted data from the outbreak on the Diamond Princess cruise ship. medrxiv. 2020 Mar 5. <https://www.medrxiv.org/content/10.1101/2020.03.05.20031773v2.full.pdf>
34. Grasselli G et al. Critical Care Utilization for the COVID-19 Outbreak in Lombardy, Italy: Early Experience and Forecast During an Emergency Response. JAMA. 2020 Mar 13. <https://jamanetwork.com/journals/jama/fullarticle/2763188>
35. Cuppini L. Covid-19 al via i farmaci che fanno sperare [COVID-19, the drugs we have been hoping for]. Corriere della Sera. 2020 Mar 24. https://www.corriere.it/salute/malattie_infettive/20_marzo_24/covid-19-farmaci-che-fanno-sperare-sono-oggetto-studi-clinici-8ae11f80-6d45-11ea-ba71-0c6303b9bf2d.shtml
36. Yam LY et al. Non-invasive versus invasive mechanical ventilation for respiratory failure in severe acute respiratory syndrome. Chin Med J (Engl). 2005 Sep 5; 118(17): 1413-21. <http://davidcrowe.ca/SciHealthEnv/papers/5164-Ventilation-SARS.pdf>
37. Report on COVID-19 in critical care. ICNARC. 2020 Mar 20. <https://www.icnarc.org/About/Latest-News/2020/03/22/Report-On-196-Patients-Critically-Ill-With-Covid-19>
38. Cao B et al. A Trial of Lopinavir-Ritonavir in Adults Hospitalized with Severe Covid-19. N Engl J Med. 2020 Mar 18. https://www.nejm.org/doi/full/10.1056/NEJMoa2001282?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%20pubmed

39. Wu D et al. Risk Factors of Ventilator-Associated Pneumonia in Critically Ill Patients. *Front Pharmacol*. 2019 May 9; 10: 482. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6521332/>
40. Clinical Care (Coronavirus). BCCDC. 2020 Mar [accessed]. <http://www.bccdc.ca/health-professionals/clinical-resources/covid-19-care/clinical-care>
41. Granberg A et al. Acute confusion and unreal experiences in intensive care patients in relation to the ICU syndrome. Part II. *Intensive Crit Care Nurs*. 1999 Feb; 15(1): 19-33.
42. Feng E et al. Some Recovered Coronavirus Patients In Wuhan Are Testing Positive Again. *NPR Goats and Soda*. 2020 Mar 27. <https://www.npr.org/sections/goatsandsoda/2020/03/27/822407626/mystery-in-wuhan-recovered-coronavirus-patients-test-negative-then-positive>
43. Nearly 80% of coronavirus patients in Japan have not infected others: experts. *The Mainichi*. 2020 Mar 3. https://mainichi.jp/english/articles/20200303/p2a/00m/0na/012000c?fbclid=IwAR1mh4PzJDQyzW3b8Kc4V86mXq9VqB0j_muBkXjGd03SIdWnjUGSkH3-uU
44. Khan FA. Personal correspondence with FA Khan, MD. 2020 Mar.
45. Slutsky A et al. Ventilator-Induced Lung Injury Review. *PulmCCM*. 2013 Dec 7. <https://pulmccm.org/review-articles/ventilator-induced-lung-injury-review-nejm/>
46. Anzahl Tests und positiver Ergebnisse [Tests Performed and Positive Results]. *Trending Topics*. 2020 Apr 2. <https://www.trendingtopics.at/corona-faelle-oesterreich/>
47. Clinical and virological data of the first cases of COVID-19 in Europe: a case series. *Lancet*. 2020 Mar 27. <https://www.sciencedirect.com/science/article/pii/S1473309920302000>
48. Updated interim surveillance case definition for Severe Acute Respiratory Syndrome (SARS) - United States, April 29, 2003. *MMWR*. 2003 Apr 29; 52. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5217a5.htm>
49. Information about 2019-nCoV for UK Critical Care Departments. *Intensive Care Society*. 2020 Feb 11. https://www.ics.ac.uk/ICS/ICS/Pdfs/News/Official_2019-nCoV_critical_care_FAQ_and_advice.aspx
50. Brewster DJ et al. Consensus statement: Safe Airway Society principles of airway management and tracheal intubation specific to the COVID-19 adult patient group. *The Medical Journal of Australia*. 2020 Mar 16. <https://www.mja.com.au/journal/2020/consensus-statement-safe-airway-society-principles-airway-management-and-tracheal>
51. Sorbello M et al. The Italian coronavirus disease 2019 outbreak: recommendations from clinical practice. *Anaesthesia*. 2020 Mar 27. <https://onlinelibrary.wiley.com/doi/full/10.1111/anae.15049>

Appendix A Confusing Test Results

Some test results simply do not make sense if the test accurately reflects an infection that comes, making someone positive, and then goes, returning the person to negative. Sources are not given to avoid cluttering the reference section, but are available upon request.

- (Jan 31) A woman returning to Canada from China tested negative while “mildly ill” after arriving in Canada, but later tested positive. <https://www.theglobeandmail.com/canada/article-fourth-case-of-novel-coronavirus-confirmed-in-canada/>
- (Feb 11) A sick woman in Wuhan tested negative on her first test, after days of illness, but positive on the second. <https://www.scmp.com/tech/science-research/article/3049858/race-diagnose-treat-coronavirus-patients-constrained-shortage>
- (Feb 16) An 83-year old American woman was screened as disease free after leaving a cruise ship but tested positive twice after arrival in Malaysia. Ironically, her husband had pneumonia, but tested negative. Nobody on the ship was sick, nor had travelled to mainland China recently. <https://www.nytimes.com/2020/02/16/world/asia/coronavirus-cruise-americans.html>
- (Mar 1) Newsweek reported an American man tested negative upon return from Wuhan, China, without any symptoms. But later he was “weakly positive” and was returned to quarantine. <https://www.newsweek.com/cdc-mistakenly-released-texas-coronavirus-patient-who-later-tested-positive-san-antonio-mayor-says-1489939>
- (Mar 2) A medical article reported a woman in Guangdong, China who tested positive at the end of an 8 day period of symptoms, had two negative tests after symptoms had resolved (days 12 and 14), but then a positive test (day 17), followed by three more negative tests (days 20, 22, 32). She was asymptomatic this entire time. <https://www.sciencedirect.com/science/article/pii/S1201971220301223>

Appendix B 'Magical' Positive Cases

The following cases are gathered from news reports of people who tested positive with no known connection with other coronavirus cases, plus no travel to the originally affected regions. To avoid cluttering the reference list, the references are not provided, but are available upon request.

- (Feb 2) An 80 year old Hong Kong man tested positive after hospital admission due to a fever, but his only recent trip to mainland China was a brief visit to Shenzhen, just outside Hong Kong (over 1000km from Wuhan by car). He had no contact with other cases, markets with live animals or wild animals. <https://news.rthk.hk/rthk/en/component/k2/1506121-20200202.htm>
- (Feb 13) A Japanese woman in her 80s tested positive after death. Her son-in-law, a taxi driver, also tested positive. He had not travelled to the affected parts of China and denied having carried any foreign customers in the two weeks before testing positive. https://www3.nhk.or.jp/nhkworld/en/news/20200214_15/
- (Feb 16) An 82-year old man in Seoul, Korea, had no record of overseas travel or contact with other positive testing people. <https://en.yna.co.kr/view/AEN20200216001355320?section=national/national>
- (Feb 17) Three men in Aichi, Chiba and Hokkaido prefectures in Japan have no infection routes identified. <https://www3.nhk.or.jp/nhkworld/en/news/backstories/878/>
- (Feb 18) A 61-year-old woman described as a “superspreader” was the first person diagnosed in her highly populated region of South Korea, with no known contacts or travel to explain her case. She was blamed for spreading the infection to 37 other people, but this may just be an artefact of the size of the church. She had 1,160 “contacts” (presumably mainly members of her congregation), and so the fraction of cases among her contacts is 3.3%, lower than the rate of positive tests seen overall in South Korea. <https://news.join.com/article/23708745>
- (Feb 20) JAMA article on original cases in Lombardy reports that none of the 37 cases found within 24 hours had any links to each other or to previous coronavirus cases (e.g. from people arriving to Italy from China) [34].
- (Feb 22) Two cases in Chiba prefecture, Japan, had no relationship with each other, or any contact with other cases or a relevant travel history. <https://www.straitstimes.com/asia/east-asia/japans-new-coronavirus-cases-rise-again-as-doubts-about-prevention-grow>
- (Feb 22) Director-General of WHO says that “cases with no clear epidemiological link, such as travel history to China or contact with a confirmed case” are a concern. <https://www.npr.org/sections/goatsandsoda/2020/02/22/808440540/coronavirus-cases-triple-in-south-korea-who-keeps-eye-on-africa-iran>

- (Feb 27) After a hospital in Vienna, Austria, decided to test everyone with compatible symptoms, a 72-year old man tested positive. He had no known route of infection, had already been in the hospital 10 days, and none of his contacts were ill or infected. <https://www.vindobona.org/article/coronavirus-infected-person-has-been-in-hospital-for-several-days>
- (Feb 27) An 88-year old man in San Marino (Duchy within Italy) tested positive, but an investigation showed he had not travelled abroad, nor to the 'red' areas of Italy where other cases have been found. <https://sanmarinortv.sm/news/comunicati-c9/gruppo-coordinamento-emergenze-sanitarie-aggiornamento-del-27-febbraio-2020-a184304>
- (Feb 28) An Oregon resident became the first positive case with no known history of travel to affected countries or contact with infected individuals. <https://www.washingtonpost.com/world/2020/02/28/coronavirus-live-updates/?p9w22b2p=b2p22p9w00098>
- (Mar 2) El Pais reported that at least five positive cases in Torrejón de Ardoz, near Madrid, had not travelled to any country considered a risk, not had contact with any other patient. <https://english.elpais.com/society/2020-03-02/health-experts-concerned-over-unexplained-coronavirus-cases-in-spain.html>
- (Mar 6) British Columbia, Canada reports a positive case with no recent travel history and no known contact with another patient. <https://www.scmp.com/news/world/united-states-canada/article/3073841/coronavirus-british-columbia-announces-canadas>
- (Mar 19) CTV reports on a man with leukemia, who went to a hospital with night sweats and a cough, was given antibiotics and sent home, worsened, was intubated, and then sadly died. A test result received after his death was positive. He had not recently travelled or had contact with another coronavirus patient. <https://www.ctvnews.ca/health/coronavirus/stay-home-urges-widow-of-51-year-old-ontario-man-who-died-of-covid-19-1.4860802>
- (Mar 21) Iceland reported that 33.2% of 473 cases had not been conclusively traced to a source of transmission. <https://www.government.is/news/article/2020/03/15/Large-scale-testing-of-general-population-in-Iceland-underway/>
- (Mar 25) The urban region of Kitchener-Waterloo in Canada reported that, "For almost all of our recent presumptive cases, there is no link to a previously identified case". <https://www.kitchenertoday.com/local-news/risk-of-contracting-covid-19-present-across-the-region-2198655>

Appendix C Preserve the Test

Overall, it seems that test results must be interpreted to preserve the coronavirus theory. No alternative interpretation is allowed. And when there is an inconsistency, it must be ignored or explained away, often invoking imaginary data.

- As mentioned above, in Reference [3] the daughter, important in the chain of transmission of a family, was interpreted as a false negative. Alternatively it could have been concluded that this woman did not have the coronavirus, but that would have badly damaged the family transmission story, and left open other reasons for the cluster of illnesses (and CT scan abnormalities).
- Also in Reference [3] the grandson tested positive without any symptoms at all, except lung abnormalities on a CT scan. This allowed them to declare him as ill (asymptomatic pneumonia). But he could have been an asymptomatic case or a false positive.
- A woman who returned from China to her Canadian university with illness, first tested negative, and then positive. This was interpreted as indicating that she had very little virus in her body at the time of the first test, and that the test was not sensitive enough. However, PCR testing is extraordinarily sensitive, and if she had so little virus, how was it that she had symptoms? An alternative explanation is that she became positive on the test in Canada, perhaps because this virus is actually quite common, or because the test is not for a virus, but is just measuring RNA created by the human body in response to disease conditions.[8]
- The four Germans [9] could be seen as showing that the RNA test produces false positives or that the illness produced by the virus is often not severe. But it will be interpreted as neither by dogmatic promoters of the coronavirus theory, it simply will not be mentioned now that the main message, that the virus is infectious, is bolstered by the evidence.
- Out of 206 Japanese evacuated from Wuhan, only three tested positive, and two were found to have “no symptoms”. Instead of considering them false positives, they are considered infected and possibly infectious.[12]
- Of 6 positive cases in Singapore reported in [14], the first had a sore throat and cough, but no pneumonia, the second and third had undescribed symptoms, and the last three had no symptoms.
- A woman returned from Italy to Cuba, where her husband was, and developed minor respiratory symptoms after her return [27]. Her symptoms resolved, but a few days later the husband developed symptoms, and both went to a hospital, where they were put in isolation. When they were tested, the husband, who had not been outside the country, was positive, but the wife was negative. The medical institute hypothesized that she had become negative in the 15 days after her first symptoms, but there was no evidence that she had ever been positive.
- A 66-year old pastor and musician who had questioned the coronavirus panic got double-pneumonia, was put on an ventilator and died. He

apparently tested positive, but his wife, who he had been travelling with, tested negative, despite also having double pneumonia.

<https://patch.com/virginia/fredericksburg/amp/28659831/va-pastor-musician-dies-coronavirus-he-had-questioned>

- A dog in Hong Kong whose owner was positive, also tested positive, but scientists claimed that perhaps the dog was not infected but had just inhaled or ingested virus particles. They did not explain why this could not also occur with humans. <https://www.cnn.com/2020/02/28/a-dog-in-hong-kong-tests-positive-for-the-coronavirus-who-confirms.html>
- A cat in Belgium whose owner was positive, also tested positive, but vets claimed that although people can infect animals, it is not possible the other way round. No widespread testing of animals has been performed. The cat was sick, and has recovered. <https://www.brusselstimes.com/all-news/belgium-all-news/102984/coronavirus-belgium-reaches-7284-confirmed-cases/>
- A tiger in the Bronx Zoo tested positive, one of 7 animals that developed a dry cough, but the only one to test positive. There was no explanation about how a human got close enough to transmit the virus, whether that person is still alive, and whether they also tested positive for coronavirus. <https://nypost.com/2020/04/05/a-bronx-zoo-tiger-now-has-coronavirus/>

Appendix D Revision History

Revision	Major changes
6.2	False positives: Chinese paper documenting 80% false positive rate. Transmission 5: Illinois couple, first community transmission in US. Treatment: Completely reorganized and updated. Treatment experience: Information from Italy deaths and Wuhan patient.
6.3	Revision History added. Information from Diamond Princess analysis. Correct link to Chinese false positive paper
6.4	Numbered sections. Replaced news report of Italian deaths by official ISS report, updated with many more patients, in the Treatment section. Split off first part of "Treatment Experience" into "Patient Status".
6.5	Moved 'magical transmission' cases to Appendix A and added another case. Moved 'Preserve the test' cases to Appendix B.
6.6	Reorder appendixes in same order as text. Moved 'Confusing Test Results' to Appendix A. Fix all hyperlinks from URLs in reference list.
6.7	Comments from Dr. David Rasnick Put Executive Summary first Expand comments on false positive study now English translation is available. Added report on Italian cluster of 37 disconnected cases to 'magic transmission'
7	Add link to English version of ISS report. Add more drugs, and information on usage in Italy, to Treatment section (Tocilizumab etc). Add failure of Chinese Kaletra (Lopinavir+Ritonavir) drug trial. Under Treatment, new section on invasive ventilation, including VALI and VAP. Add links in appendixes, to original news articles, where no reference is provided. Add footnotes for RNA and the retraction of the abstract of the Chinese false positive paper.
7.1	Corrections to invasive ventilation section
7.2	Moved Revision History to an appendix. Clarify that the paper is not advocating people going to an ER with minor symptoms. Add Austria testing statistics. Add references to the invasive ventilation section to show recommendations to rapidly intubate and avoid non-invasive ventilation. Use COVID-19 for both the name of the supposed new virus and diseases blamed on it.