

Coronavirus Questions NRC Translated

S.K.

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Abstract

The questions in this document are translated from the Dutch news article of NRC.next (<https://www.nrc.nl/nieuws/2020/02/02/wat-we-tot-nu-toe-weten-over-het-wuhan-coronavirus-a3989006#item5>). Google Translate has been used as well as checking with the eye.

This is meant for any non-Dutch reading person who would like to see a bunch of questions and answers together about the virus. Not all questions from the article have been translated, because of time considerations, the ones I guessed were most interesting to international students were picked out. Of course I could have been wrong – since I am no international student, I can not really know what is most interesting to you. I hope this is helpful to somebody.

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1 General Questions

1.1 What is a coronavirus?

Coronaviruses are so named because of their distinctive appearance under the electron microscope. The regular protrusions on the protein mantle that glow like bright white dots make it look like they are wearing a crown (corona in Latin). Coronaviruses have a single strand of RNA as a genetic material. A wide variety of coronaviruses occurs in nature. They infect birds and mammals, strikingly often bats.

So far, six strains are known to infect humans. They usually infect the upper respiratory tract and the gastrointestinal tract. They usually cause mild complaints such as a cold, with a cough, sore throat and sometimes a fever. Some variants also infect the lower respiratory tract and can cause life-threatening respiratory infections, such as in the case of SARS and MERS, as well as this new coronavirus.

1.2 Will the virus disappear when the temperature rises?

Weather conditions affect the life and spread of viruses. For example, many viruses spread over longer distances at low humidity, such as indoors in winter when the fireplace is on. Temperature also plays a role: some viruses can survive outside a body for a shorter time at a higher outside temperature, others longer. UV exposure, such as from the sun, kills viruses.

It is not yet known under what circumstances the new coronavirus spreads less well. The coronavirus that caused SARS in 2002, which resembles the new coronavirus, thrives at lower temperatures and low humidity: it survives for 5 days at tem-

peratures between 22 and 25 degrees Celsius and 50% humidity. It will not survive at high temperatures (38 degrees Celsius and 95 percent humidity).

If that is the case for the virus that causes Covid-19, it will take months before the weather conditions have an effect on the spread. We only reach temperatures higher than 25 degrees in the Netherlands when it is high summer.

1.3 Can the virus survive on objects?

Outside of the body, coronaviruses do not remain intact for long. The coronavirus that caused SARS in 2002-2003 and resembles the current coronavirus was able to survive on some surfaces for about three days.

Getting the virus from a package from China is unlikely, none of the known coronaviruses spreads in this way according to the RIVM.

2 Medical Questions

2.1 How do you know if you have the virus and how ill does it make you?

The reported symptoms of Covid-19 vary by patient. Most people (at least 8 in 10 patients) have mild complaints that last one to five days. They automatically get better again. The most noted are colds such as a dry cough, sore throat and fever, followed by fatigue and muscle pain: the upper respiratory tract is infected. Headaches, nausea and diarrhea are also uncommon. There are also people who are infected, but experience few or no complaints. In the first eight days of the complaints, people seem to be most contagious.

Some people (about 2 in 10) get worse symptoms: severe pneumonia and shortness of breath. When pneumonia develops, it is on average almost six days after the first symptoms. Then the lower respiratory tract is also infected by the virus. About a quarter of them become critical: they have severe respiratory distress syndrome (ARDS) and need to be treated in an intensive care unit. Patients are on ventilation for about three weeks, they only recover in the third week.

The chance that you have Covid-19 in the Netherlands if you have the aforementioned flu or cold-like complaints is still very small. Among the patients with flu-like symptoms who were tested in a sample in the week of March 2 to 8, 40 percent found influenza virus (flu) and 5 percent had a cold virus, Nivel reports. The research institute conducts this measurement weekly with RIVM. For the past six weeks, the new coronavirus has also been tested. Two infected persons have thus far been found.

2.2 How deadly is the virus?

The lethality of the virus is difficult to determine because the epidemic is still in full swing. The mortality rate can also change per time and place. The lethality does not depend solely on the properties of the virus, but also on how seriously ill patients can be treated and how well the picture of the actual extent of the epidemic is.

The World Health Organization (WHO) reported on March 5 at its daily press conference that global mortality is currently at 3.4 percent. That's a lot more deadly than previous estimates, which came in at just over 2 percent.

The initial mortality rate of Covid-19 was lower than that of SARS, another type of coronavirus that caused a global epidemic in 2003 (8,096 cases and 774 deaths, 9.6 percent death rate). Meanwhile, the global mortality rate of the new coronavirus is over 15,300 and the number of deaths will certainly increase. How it will develop further is still uncertain. That depends not only on the aggressiveness of the virus, but also on the quality of medical care for patients.

The mortality risk is not the same for everyone who becomes infected with the virus. Chinese statistics show that especially elderly people and people with underlying health problems die more often from Covid-19. These are, for example, people with cardiovascular disease, diabetes or chronic respiratory problems. In children, the infection is generally less severe.

2.3 How contagious is the virus?

How infectious the virus is and how quickly it spreads is not yet well known. The propagation number used by virologists to indicate how contagious a virus is (R_0), is now estimated by the European Center for Disease prevention and control at 2.2. This means that each infected person infects an average of 2.2 other people. The time between infection and the onset of symptoms is on average 5 days, but it can also be two weeks.

The value for R is not constant. The R_0 represents the infectivity of a pathogen at the start of an outbreak. It is then assumed that everyone is equally susceptible and that no measures have yet been taken. As soon as that changes, the experts no longer speak of R_0 , but of R_t , the effective contamination number. At the 2014 Ebola outbreak, in West Africa, the R changed because people became afraid of becoming infected. They started to avoid each other. As long as R is above 1, there is exponential growth. To give an example. For example, if R is 2, an infected person transfers the pathogen to 2 others. They transfer it to another 2 others in the same time span. Is a total of 4. And so on. Always in the same time steps: 8, 16, 32, 64. . .

To contain and extinguish an outbreak, the R must fall below 1. This can be achieved by taking measures. The nature of the measures depends on how the pathogen is transmitted. Through blood, through the air, through human contact.

For example, the transmission of the coronavirus can be limited by: washing hands frequently and well, no shaking hands, keeping distance from each other, minimizing contacts. An analysis by RIVM, published on March 25, shows that in the Netherlands (especially Brabant) the R seems to have decreased from 2 to approximately 1 in a few weeks.

People who carry the coronavirus are likely to be contagious as soon as the first cold symptoms develop. German virologists concluded this after a study on nine patients. They excrete many viruses for at least eight days, which can also be cultivated in the lab - a measure of infectivity. Even when people no longer felt sick, they sometimes continued to have viruses in their mouth and pharynx and their mucus for up to three weeks, although they could no longer be cultivated. The authors therefore recommend that people with more severe symptoms should not be sent home until at least ten days after the onset of the symptoms and that they still be sick in isolation.

Based on the German study, nothing can be said about the degree of infectivity before the symptoms start. There is a lot of virus production in the first week, even in patients with few complaints.

2.4 How does group immunity work?

Group immunity can sustainably protect vulnerable persons in society against serious illness from the Covid-19 virus. Herd immunity, or group protection, means that there are so many people with resistance to an infection in society that weaker people have a significantly lower risk of getting this infection.

How many people in society need to be immune to achieve that protection depends on the type of infection and the conditions under which it circulates. When it comes to a highly contagious pathogen, more people in society must be immune to protecting vulnerable groups as well. If isolation measures can reduce transmission, fewer people with resistance are needed.

In the case of the new coronavirus, the question remains how quickly group protection can be achieved in a country. Because the infection is highly contagious and currently no one is resistant to it, many people will first have to become infected and build their own resistance to the virus before a large degree of group protection occurs.

Prime Minister Rutte announced that the cabinet will review the situation every day and then take appropriate measures every day. Dutch policy does not aim to achieve group immunity, but to spread the wave of infections as much as possible over time, so that not everyone falls ill at the same time. Group immunity then arises as "by-catch". The Dutch approach is similar to 'pumping braking', so that the number of IC patients does not get out of hand, but at the same time it is possible to

build up as much immunity as possible, which forms a buffer against the virus. If a vaccine is added later, this can be further enhanced.

Incidentally, with this new coronavirus the question is how long the immunity of people who have gone through infection is maintained. Other mild coronaviruses that cause colds are known to return to susceptibility to the infection after about a year.

2.5 What happens to patients in the Netherlands?

According to protocol, patients are kept in "isolation nursing". This means that the patient is treated in a separate room at home or in a hospital where not everyone can just enter.

The doctor then requests a test from RIVM and Erasmus MC to determine whether the patient is actually infected with the coronavirus. The test result is there in about six hours. If the virus is discovered in someone in the Netherlands, more laboratories will be called in for rapid tests, according to the RIVM. There are about fifteen such labs.

If someone is infected, the GGD will start a so-called "contact investigation" to determine who the infected patient has had contact with. These people should then keep a close eye on their health during the incubation period of the virus.

Persons who have had contact with patients are monitored and have to take their temperature twice a day and report it to the GGD, the RIVM writes on its website. They must also report complaints.

2.6 How are patients treated?

RIVM has drawn up guidelines for the treatment of seriously ill Covid-19 patients. Treatment consists primarily of combating the symptoms. For example, in patients who are very short of breath because of the respiratory infection, doctors will provide extra oxygen. Seriously ill patients are admitted to intensive care. In extreme cases, these people should be able to receive not-well-proven therapies that are likely to inhibit the virus. This includes the antimalarial drug chloroquine.

There are no medicines on the market yet for the treatment of Covid-19. However, scientific research is ongoing into the safety and efficacy of drugs that are available on the market as agents for other diseases, and which may also limit the severity of the symptoms of Covid-19. These are virus inhibitors that are registered as medicines for influenza or HIV. They prevent the multiplication of RNA viruses. This coronavirus is also an RNA virus. Indeed, in tests with cells, these agents also appear to inhibit the virus Sars-Cov-2. But how they are tolerated by severely ill Covid-19 patients and whether they actually reduce the disease has not yet been properly mapped.

Chloroquine is, according to the RIVM, the drug of first choice, since it is expected that effective doses could be administered safely and without many side effects. The combination therapy of HIV inhibitors lopinavir / ritonavir is also eligible. In very severe disease, a combination of chloroquine and lopinavir / ritonavir should also be considered. If this does not help enough or the patient's condition worsens further, consideration may also be given to adding remdesivir to the treatment. Remdesivir is an experimental virus inhibitor that is not yet on the market, but for emergencies the manufacturer makes it available through RIVM.

2.7 How many beds are available on intensive care units?

The Netherlands has 1,150 intensive care beds. Of those beds, 200 are "insulated": they are located behind a lock, where nurses and visitors can disinfect and change before leaving the room. The 1,150 beds are usually 70 percent full. Other patients will be displaced if too many seriously ill corona patients arrive. The 1,150 IC beds that the Netherlands normally has should now be expanded to 1,600 within a week, Diederik Gommers, chairman of the Dutch Association for Intensive Care (NVIC), warned in the *Tweede Kamer* on Wednesday. Because there are also other IC patients. Gommers has also indicated that in a crisis situation the number of beds can be scaled up to 3,000.

In the meantime, extra rooms are being prepared in different hospitals or rooms are being arranged differently. Scheduled surgeries are postponed almost everywhere, so that there will be more time and space for corona patients in the coming weeks. Outpatient appointments are partly made online.

If more than 2,000 corona patients come to the Netherlands, which is now the case, the 200 insulated beds will become full. In Italy, an average of 10 percent of corona patients end up in intensive care. When 11,000 corona patients arrive, all ICs are completely full.

It is essential for an IC bed that there is ventilation equipment and a nurse who knows how all equipment works. There has been a shortage of specialist hospital nurses for several years. Hospitals are now making every effort to keep staff working and to quickly test for corona if necessary. If someone is not infected, he or she can continue working.

3 Practical questions

3.1 What can you do to prevent contamination? Do face masks help?

The contamination between people occurs through exhaled droplets with virus particles. A person can come into direct contact with this if the infected person coughs or sneezes, but also indirectly by touching an infected object or surface, or by touching the infected person, for example by shaking his or her hand.

Face masks can help limit the spread of an infected person's droplets. Wearing a mask to avoid getting infected yourself will not completely prevent you from breathing contaminated air, nor will it prevent the virus from getting on your hands. Anyone who subsequently touches their face is still at risk of infection.

Washing hands regularly when you've been in public places is just as important. Touch your face as little as possible and keep away from coughing or sneezing people. And who still wants to use a mouth mask, must replace it regularly. In the Netherlands, only medical personnel are advised to wear mouth masks.

To prevent spreading, RIVM advises to stay at home if you have a cold or a sore throat, cough or fever, and to avoid social contacts. Even those who have no complaints should work from home as much as possible to limit contact with others and keep away from other people.

In addition, the spread of the virus can be reduced by sneezing and coughing on the inside of the elbow, washing hands regularly with soap and water, using tissue paper, and not shaking hands.

3.2 Is alcohol-containing hand gel better than soap?

To prevent the spread of the new coronavirus - and other pathogens - RIVM recommends that you regularly wash your hands thoroughly with soap and water, cough or sneeze in the elbow, and use paper tissues.

If there is no soap and water nearby, hand alcohol or alcohol gel are a good alternative to disinfect the hands.

3.3 How does social distancing work?

Everyone in the Netherlands is asked by RIVM to keep 1.5 meters apart. Also when shopping for example. That distance was established based on initial studies of how far the virus can spread without direct physical contact. The World Health Organization maintains its advice at 1 meter for the time being, but there are also recent Chinese studies that show greater distances. For example, a government report has been published on a bus ride in Wuhan, showing that the virus can travel longer

distances than most other governments advise: up to 4.5 meters. The virus is also spread by people who are apparently healthy.

In the briefing of the *Tweede Kamer* on Wednesday, Jaap van Dissel of the RIVM indicated that stricter requirements than 1.5 meters are being considered. In any case, the rule of thumb is: the more distance people keep from each other, the smaller the chance of contamination and spread. This also applies outdoors, and in larger spaces such as supermarkets. But how do you do that in a good way?

It is striking supermarkets that it can be difficult to keep that distance, it is important in those situations to pay attention and if necessary to ask the other person to take a step back, or to leave. When running on the street or in a park, runners can approach from behind. Hopefully a glance is enough to help people remember, otherwise you can also kindly ask or gestures to keep some distance. Keeping social distance doesn't have to mean an antisocial attitude. As a result, there are also people who advocated calling it not "social distance" but "physical distance". You can just be social while keeping a physical distance.

3.4 Is it still okay to go outside?

Walking, cycling, running, walking the dog: nature beckons with spring just around the corner. The following also applies: keep 1.5 meters apart, and stay indoors for complaints such as fever, cough, sore throat. Gathering with more than two people without distance is no longer allowed since Thursday, March 26, when emergency regulations were issued in all 25 security regions. If you do not keep your distance, you can get a fine of up to 400 euros.

Meetings are also prohibited, although there are still exceptions for funerals, weddings and religious services. But only a maximum of 30 people may be present, who must keep 1.5 meters away from each other. Municipal and parliamentary assemblies are also exempt from the ban. An exception to group formation has been made for people who form one household, and for children up to the age of twelve who play together (outdoors). Their parents or supervisors then have to keep their distance from each other.

If people structurally do not comply with the distance rules at a certain location, a safety region can close that location (a park, square or beach). This also applies to shops and markets: if customers do not keep a meter and a half away, action can be taken. Enforcement of the ban is done by the police and extraordinary investigative officers (boas). They can issue fines.

Going outside may be a good idea - just for some exercise and fresh air. Greenery reduces stress and uplifting and sufficient daylight is good for a winter dip (which can also be caused by sitting too much indoors). Those who cannot or do not want to go outside, but still long for light and air: occasionally sit by the window. If neces-

sary, leave it ajar: the birds are currently singing outside. Other tips to bring nature into your home: the *Beleef de Lente* webcam, and the *Snapshot Hoge Veluwe* project (where you can help identify animals in photos).

4 Consequences for society

4.1 Which measures are being taken in the Netherlands?

All Dutch people with a mild cold, cough or throat complaints and possibly a fever should stay at home if possible. Everyone should also try to have as little social contact as possible, to work from home as much as possible or to spread working hours. Public locations such as museums, concert halls and theaters remain closed. The elderly and persons with reduced resistance should be visited as little as possible and vulnerable groups are advised to avoid public transport. The Dutch are advised to keep 'an appropriate distance' from each other - about a meter and a half. Minister Bruno Bruins (Medical Care, VVD) requested "urgently" not to hoard. The reason for these measures is that the World Health Organization (WHO) has characterized the corona outbreak as a pandemic and that hospitals have come under pressure.

Because the number of infections in the Netherlands rose rapidly in March, the cabinet tightened up the measures on Monday 23 March. Minister Ferd. Grapperhaus (Justice and Security, CDA) announced that all gatherings and events will be banned until June 1 this year. In addition, mayors may take strict action with the aid of emergency claims. This means that specific locations can be closed to the public, such as parks and beaches. A separate regulation applies to markets: market visitors must be able to keep a distance of one and a half meters, if that is not possible, intervention can be made. Rules are drawn up in shops for a strict door policy. Shops that do not adhere to this can be closed. A ban on group formation is also being introduced. Young children may continue to play with each other, and parents are asked to use "their common sense". If it turns out that three or more people are not 1.5 meters apart and they are not a family, "hefty fines" of up to 400 euros can be issued. In-house visits should be limited to a maximum of three, the distance of one and a half meters must also be respected there.

5 Worldwide consequences

5.1 What about travel restrictions?

Many countries have imposed travel restrictions. They are very different from each other. Some governments close their borders to travelers from countries they consider to be at risk, or force them to quarantine on arrival. Others ask this of all for-

eign travelers. The European Union has decided, after Member States have taken their own border measures, to temporarily ban unnecessary travel to the Schengen area (22 Member States plus Norway, Switzerland, Iceland and Liechtenstein), with the exception of certain groups.

In the United States, a temporary travel ban is in place for Europeans and the borders with Canada and Mexico are also closed to unnecessary travel. The Dutch government has called on residents to stop traveling abroad. Travelers are stranded worldwide because governments have imposed entry restrictions or flights have been canceled.

5.2 Why are countries so different in their approach?

One country is committed to large-scale testing, as South Korea has done, the other is trying to cope with the virus with temperature measurements at airports and quarantine of a minimum number of patients. Most countries have introduced entry restrictions, some only allow their own passport holders. The measures follow up quickly and differ per country.

Not one authority can decide what governments should do. The World Health Organization mainly has an advisory role and the European Union, for example, cannot decide for Member States how to shape their response. Public health is a national concern. Each government makes its own trade-off between the desire to limit the spread and the disruption of social life and the economy. As the pandemic spreads, the balance shifts further towards strict interventions.

More and more countries are opting for a lockdown, in various degrees. The almost complete shutdown of public life in the Chinese city of Wuhan was, according to many, draconian, but now more countries are opting for measures that come close to it. In the severely hit Italian Lombardia, for example, only supermarkets, pharmacies, post offices and banks may remain open. Outdoor sports are no longer allowed.

In France, Spain and Belgium, too, citizens are only allowed to take to the streets for essential purposes. India has the biggest lockdown ever: the entire population has to stay inside. Restrictions also apply in California, New York and other US states. New infections are now being counted at a very high rate in the US. This is partly because testing is only now getting under way. About 60 percent of the infections identified are in New York. Here, more than 8 times as many cases are known as in New Jersey, the second in the rankings. Medical care there is so heavily overloaded that emergency hospitals are set up.

President Trump has little patience with the pandemic. He says he hopes that at Easter, on April 12, the economy will turn more or less as usual.

About a quarter of the world's population now lives in some form of lockdown.

Globally, half of schoolchildren and students do not attend school or college. Travel restrictions apply to more than a third of people on Earth. The World Health Organization has called on governments not to leave it at lockdowns alone, but to use that time to actively fight the virus with tests and quarantines. “Asking people to stay at home increases the time and protects health systems, but it is not enough to put the epidemic on its feet,” said Director-General Tedros. “We have already endured many pandemics and other crises. We will also face these. The question is at what price.”

5.3 What is the European Union doing?

The European Commission has proposed closing the external borders of the European Union. Government leaders of the European member states have yet to agree. The European Union cannot compel Member States to take measures - health care is a national matter - but it can offer support and try to ensure that national efforts match each other as closely as possible. The European Commission has a crisis team with five European Commissioners. They, together with the European Center for Disease Prevention and Control (ECDC), should ensure that reliable and up-to-date information on the outbreak in Europe is collected and that Member States are provided with clear guidelines for combating or preventing an outbreak.

Brussels has also issued an export ban on certain medical devices to prevent, for example, the export of mouth masks or respiratory equipment outside the EU. At the European level, work is also continuing on a joint purchasing program for mouth masks and respirators. After Germany and France were previously irritated by not sharing their own stocks, they are doing so again after pressure from the European Commission. Germany has sent a million mouth masks to Italy, according to the Commission.

The European Commission itself has also brought together various EU funds for an emergency fund of EUR 38 billion. Brussels also wants to be flexible in applying the budgetary rules. Member States that have little to spend to combat the virus or to absorb the economic consequences will be allowed to enter the red figures. Brussels will also apply state aid rules smoothly, allowing Member States to help companies hit hard by the crisis.

5.4 How did China emerge from the crisis?

China has not had new domestic infections for several days and is proud to have saved the world from a bigger catastrophe, creating time for other countries to prepare. Chinese doctors are now providing information about virus control in Europe and China is donating medical devices to countries with shortages.

However, the situation in China itself is still far from normal. It seems difficult to resume public life just like that, because the virus can easily resurface. For that

reason, many control measures are still in force.

The outbreak is also largely under control in Taiwan and Singapore. Both governments are now praised for having made major interventions at an early stage in order to keep the virus small. The Taiwanese government already understood in mid-January that something was wrong in China and took a long list of measures in the days that followed, including checking passengers arriving from Wuhan. Singapore turned out to be strong in the so-called contact investigations: tracking the corridors of sick people and monitoring the people with whom they had contact. Singaporeans had no problem sharing their data with the government.

The number of new infections has risen again in recent days in Singapore and Taiwan. This mainly concerns people who come from outside the country. These countries, like Hong Kong and China, fear a second wave of illness.

References

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