Blog: 19/7/2020

I haven't added to my blogs this past month as I thought the emergency was over- after all its now 79 days since a case of community transmission and all the new cases are from residents and New Zealand born Kiwis returning home. However the misinformation continues so I thought I would blog further for those of our patients who are interested.

America continues to post what seems to us an enormous number of new cases daily. What people forget is the USA has an enormous population, 338 million at last count. When their President Trump claims that America is doing more tests than anyone in the world at nearly 50k, he is very wrong. This isn't taking into account that the rich get tested frequently, and the poor do not. China is testing Wuhan, 11 m residents alone. However China's population is over 1.4billion. Neither compare with our rate of testing on a population basis. Our aim is to conduct 6000 tests/day for our little just under 5m population. If you do the math, we are testing at least 6x more often than USA, and while China's rate is not totally reported, and probably much more, on a per capita basis we are testing far more people in NZ, one of the highest rates in the world.

President Trump also counts in his 40k tests all those 8-10k faulty tests they used in the first place developed by their Centre of Disease control. What people seem to miss though is how few Americans are infected yet. Their number of deaths seem enormous to us: it is 4.5x their normal flu season deaths, but it's still 0.04% of their population. Even if we are very sceptical of the numbers reported as sick, after all lose your job and lose your medical insurance and you can't afford a US$120-$180 test, and one in over 8 Americans have lost their jobs- at 3.3m cases of proven covid-19 this is less than 1% of Americans. We know herd immunity for any disease starts at 70%. That is a big jump until sufficient number of people have been infected and recovered until the virus dies out due to lack of available victims.

Britain is just the same, underreporting cases due to manipulation of statistics, as if that will make Sars-Cov-2 seem less threatening. The implications for us in New Zealand are simple. It could be 3-4 years before we can open up the borders.

What could be the gamechangers? I have said this in previous blogs and will say it again. There are a number of points in Covid-19 which need addressing. America seems to spinning its hopes on a vaccine, especially their Moderna one. However they are going after a type of vaccine that has never been produced before, an mRNA vaccine, and this company has never produced a vaccine before: in all a rather fraught and maybe dangerous track. Better to watch the Oxford University /Astra Zenaca collaboration aiming at targeting a stable area on those corona virus spikes.

China has had a head start, and also has a couple of trials with two different vaccines targeting those virus spikes, and are trialling theirs in Africa. But no vaccine is 100%. Just ask our patient Robert, who a couple of years ago came to me sick and a few days even sicker bought in by his worried wife. He is always good about getting his annual flu shots. He still got the Influenza A going the rounds, and then the Influenza B going the rounds too at the same time, and then of course double pneumonia to boot [Middlemore cared for him well, even if an orderly told him to get a flu shot next winter....]. It was not a good year for the guesses made in the flu shot, but it was the best that could be done- I have no problem with the way the epidemiologists play the game of guess what strain 18 months in advance so they can order from North Italy and multiply up sufficient jabs to cover our winter influenzas. Anything that helps us avoid influenza is helpful, but in some it merely makes it cause a less serious illness. In others it obviously does not help if the epidemiologists get it wrong and pick the wrong strain to guard against, or more often, another strain pops up due to mutation and gets away faster.
A good vaccine has to be well tested before it shows how good it is: at least USA and the UK will

have sufficient cases to do this for us before we buy in.

We seem to be winning in limiting deaths from Covid 19. Those amazing Intensive Care specialists who were doing 18 hour days and still finding time to share their insights on specialist websites with each other, have begun to sort this out with death rates dramatically falling especially in to the under 60 year old group. Dexamethazone, a steroid 15x more potent than prednisone seems to stop the cytokine storm in its tracts. Steroids too early though help the virus multiply. We are learning here to control the hypertenson and clots with medicines we have good experience with. Over 60s who are more likely to have diabetes, COPD and kidney issues are still a very high risk group though.

Despite a few trumpets about better tests from labs like an American Biological warfare one, we do not seem to have progressed much in the early diagnosis field. In NZ we are now using a serological test, and in the hospital can have the result within 2 hours, which makes it so much faster to limit contacts and isolate. Better still will be a desktop reagent test when we can diagnose a contact in the 36 hours before symptoms show when it seems patients are not only at their most contagious, but then antiviral medications will work. It's like in shingles, if we start medications in the first 72 hours, preferably 48 hours, while the virus is fast replicating, then it works. There are a number of antiviral medications that should work, not just remsidivir, an American product where President Trump bought up all the next three months supply. The current PCR test where we have to multiply up fragments, doubling and doubling millions of times, takes time but it is more accurate currently. Serological tests rely on picking up the bodies targeted response to the virus, so there is a very short window where treatment can begin and be effective. Better and faster tests are needed.

Antibody testing is important. So far the tests are not very accurate at all, with lots of false positives and it seems false negatives. The problem with people looking like they may have had Covid 19 and been immune is two-fold. Firstly, for how long are they immune? Will this wear off in a matter of 6-12 months, which is what happens if only one side of the immune system is activated.
Secondly there are other coronaviruses out there, at least three, that just cause the common cold, and seem the cause for you who lose your sense of smell for months after a bad head cold. Are the tests picking up antibodies to these coronaviruses and is there any transferable immunity to Covid-19? Time will tell....

I cannot see us opening our borders for sometime, at least a year, two or three. I know none of us want to hear that: I for one are dreaming of a Pacific Island beach and sun in winter! Maybe we might open up to selected Pacific Islands. I know I'm missing the sun – after all I am a climate refugee from the far South- is inconsequential in comparison to the mamae our patients are feeling separated from new grandchildren in Australia and family members in the Pacific Islands. We have a husband at home separated from his five month pregnant wife in Australia, as he came home to work early from his delayed honeymoon over the Ditch , and got caught in the rapid Lockdown, and she needs him to escort her back as she doesn't have NZ residency status yet.
We have many visiting grandparents caught here many months after arriving in to see their new mokopuna, wondering how they will support themselves, and when they will get back to their origin country. Thank goodness for Zoom.

The only other mistruth that seems to be coming up time and time again relates to people testing positive for a long time. No, You don't get the infection again, at least not for many months. We don't know beyond that [time will tell yet again....]. This myth is because of the way we test for Covid -19. PCR testing involves grabbing some cells infected with the virus, preferably through the nose right to the back of the throat, the nasopharynx. This virus is the broken up in the lab into

segments by mixing it with certain chemicals called reagents. The test identifies codes on those segments that are peculiar to Covid -19. When a person is getting over Covid -19 they are still shedding virus, but its 'dead' virus. Bits and pieces of virus, just like the reagents break the virus up into segments of coded material. Some of these are similar to what our test is looking for, and we call these in New Zealand 'weak positives'. That is the person is getting over the infection, and is no longer coughing out whole infectious viruses. It's these pieces of virus that led to reports back in March, of some of the cruise ship rooms having detectable viral fragments for 15 days after the last passengers left. We know this now, but that news was very scary at the time.

To understand the PCR test, it is helpful to remember those intrepid scientists from Otago University last year who set out to find out whether the Loch Ness monster was real. They sampled the water of Loch Ness looking for reptilian DNA. Just think of it. Lake Tekapo near where I grew up – and was freezing in the summer even if the stones where too hot to walk on- is a bit bigger than Loch Ness but not as deep. Imagine Nessie and her mate swimming around and all the scientists hope to find is the DNA that comes off a few loose scales and their wees and poos. All this diluted in 7.4 cubic kilometres of water. They didn't find any. Millions of eels they said, but nothing that resembled anything like a modern day crocodile, alligator or a prehistoric dinosaur. That might give you some idea of the way PCR can multiply up from a tiny tiny dilution,enough DNA for identification to take place. We use this in medicine now in our practice when we take blood from a pregnant woman who is only 5-6 weeks overdue, and we separate fragments of the fetal blood mixed in hers caused as the placenta tries to attach and start growing, so we can do chromosomal analysis looking for nasty genetic conditions.[NiPT testing].
The trouble with those looking for Nessie is they couldn't prove that Nessie wasn't there: they only could say they did not find her. Not being able to find her might be because the test is imperfect, they did not sample the water in the right place etc. [But imagine if they had found reptilian DNA...!]
Similarly the Covid-19 nose swab can't say you don't have covid-19, it can only confirm you do. Maybe it was an inept test? Maybe the test missed separating the RNA into recognisable fragments? These are what are called false negative tests. In the early days of testing before we had learnt to recognise many more code sequences it was common for the test to come back negative for many days until the virus had multiplied up enormously. Remember our first patient in Auckland Hospital who had come back from Iran? She tested negative numerous times and it wasn't until they took her to theatre and got a swab right down in her lungs that the swab came back positive.
Nowadays our tests are much better than this.

We have learnt an immense amount about SARS-CoV-2 in the last three months, and we are far better prepared if we do have cases of community transmission. And at least for most of us, life is looking more normal, as long as our jobs were not dependant on tourism. And we are alive, something especially those of us older health workers are very grateful that our nation of 5m made large personal sacrifices to make possible. Thank you.

Hei kona ra, Jacqueline