Blog: 17.5.2020 Tiakina Te Ora team sends its regards to all.

Another surprising week for me in relation to Covid19. It wasn't the number of days with zero cases. Nor was it today's announcement of a single case in a very young child associated with a household contact in the Christchurch Rosewood cluster. It was the announcement from our very own ESR (Crown Research Institute) at the beginning of the week that they were completing the genetic sequencing of the virus in each patient identified in New Zealand. That is, every single positive swab has been genetically analysed now.
I knew there was a rapid expansion of this sort of work around the world – and enormous knowledge sharing on the internet- in the rush to find stable sequences of the RNA, as this is what a vaccine will be developed against. But it was the possibility raised in the less stable areas where mistakes occur it seems on average every five patients that makes mapping the virus transmission possible.

Let's go back.
Someone once described viruses as a briefcase with a single sheet of plans in it. Nothing more. That's a good image. That sheet of plans is the RNA. RNA is like DNA. But instead of being that double stranded extremely long helix which we know about in our own cells, it is only one shorted strand and codes for only a few essential genes. It doesn't have the built in protections our DNA has, for instance coding for protective proteins that can repair any accidental mistakes as the DNA. Which means tiny little mistakes in a single base pair- think of this as a tiny freckle on its nose- are then passed on and on down the line of its victims. So patient five down the line of infection has this one point change in the 30,000 base pairs and keeps the 'freckle on the nose'. So does everyone who catches covid from them. But further down the infection chain patient ten acquires another mistake in ½ of one of those base pairs. Think of it as the virus now has a freckle on its earlobe as well as the nose. And patient 16 gets a 'freckle on the elbow 'too.

Why is this important? It means we can trace back along the line of the virus. We can know where the infection came from. That's why at the beginning of April we knew America did not get the infection from China directly [despite what its scientifically ignorant President says] and it came to them via Europe, especially via Britain.

What it means in New Zealand is we can trace back to the entry to New Zealand of each strain of virus circulating. It means we can say for certain: this patient is associated with the Rosewood cluster. This patient has the American strain associated with the Matamata cluster. We can eventually assemble an enormous map showing exactly all the lines of transmission because we are a small country, because we have fantastic scientists doing pure research which is suddenly very practical, and because we have a high quality single centralised health system for collecting this data. This map will eventually show gaps - this will be more days than possible between two genetically identical gases – and these will be missed cases. We will get an idea of how many asymptomatic cases there were which will also give us an idea of how many cases were burnt out with Lockdown. If antibody testing is up to scratch and accurate by then, we may even be able to fill in those gaps. Anyone who loves playing Bridge or Chess or does 1000 piece jigsaws will recognise the fascination and compulsion to complete such a gigantic puzzle. Go ESR!

These single base pair mistakes are not mutations by the way. These are occurring away from the virus gene areas in non-essential parts like the endpoints. This virus is very stable. It doesn't need to change as it's already doing very well for itself.

The explosion of knowledge about SARS-Cov-2 is amazing. It reminds us of the value of pure research, seeking knowledge for the sake of expanding our understanding....and why we need to invest in science and honour our scientists. And not just insist that research "be practical', ie be relevant to making money. This pure research has the potential to save millions of lives.

I know so much more now about Covid than I did as we entered Lockdown. And am better prepared to deal with the few patients with the inevitable post-viral syndrome from the cytokine storm. But as I said a few blogs ago, we also need effective early rapid testing to use antiviral medication in those crucial early days of infection, and access to anti-cytokine storm treatments for those patients whose immune systems go into hyper drive in that second week. And we need a good vaccine. We need them all before I would trust opening up our borders.

Sorry, it’s been about Covid again but I couldn't resist sharing the great advances that have been made. Be well, be safe and continue to wash hands, avoid touching your face and socially distance and we will win.