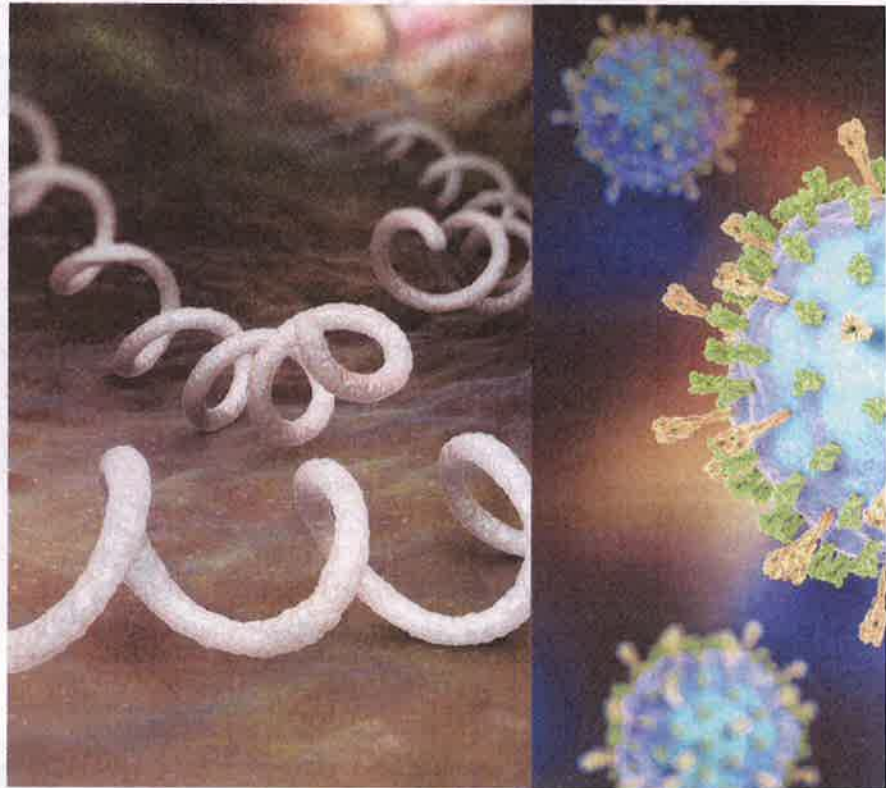


Syphilis, mumps and rickets, along with other "old" diseases, are on the comeback trail. Why? And what can we do to protect ourselves? asks **Bruce Munro**.

RELAPSE

Why we're under attack



Syphilis, mumps and TB are making a comeback.

Martin has had syphilis three times. The first case put him in Dunedin hospital with a brain disease.

The culprit, a corkscrew-shaped bacteria that can be passed on through sex, spread through his bloodstream.

It may have caused small ulcers around his genitals or mouth and then copper-coloured sores on his hands and feet, but Martin (not his real name) does not recall. There may even have been no symptoms.

The first Martin knew something was wrong was when he became increasingly unwell and lethargic — to the point he was hospitalised.

To begin with, doctors treating him could not pinpoint the problem. But then, realising he was HIV-positive, a blood test for syphilis was ordered.

By then, the bacteria had crossed the blood-brain barrier. "I had early-stage neurosyphilis," Martin, who is in his 40s, says.

"But they got it in time. I didn't go insane."

That was almost a decade ago. Since then he has caught, and been treated for, syphilis a further two times.

He is not alone. Health practitioners say New Zealand is experiencing a syphilis pandemic.

Last month, it was reported that 400 cases were voluntarily notified by sexual health clinics during 2017 — that's a 500% increase in five years.

In reality, the numbers could be much higher, they say.

Similar reports are coming from other developed countries. Last year, medical journal *The Lancet* said incidences of the Great Pox — as syphilis was called when it first panicked Europe in 1495 — had increased dramatically in North America and Western Europe during the past decade.

Why is a disease that is normally associated with lecherous kings of yore and, until a

couple of decades ago believed to be on the cusp of eradication in developed countries, roaring back?

And it is not only syphilis. The same is happening with chlamydia and gonorrhoea.

Nor is it limited to sexually transmitted diseases.

Rickets, the "soft bone disease" of the Industrial Revolution, is also making its harmful presence felt again in Western countries. In New Zealand, vitamin D deficiency, which can cause rickets, is most acute in the lower South Island.

It goes back to misinformation . . . in the 1990s. [There were] misplaced concerns around risks from vaccines, which led to a drop in our coverage rates

— University of Otago clinical microbiologist Dr James Ussher

Then there's mumps, tuberculosis, rheumatic fever . . .

Why are these old diseases on the comeback trail? And what can we do to protect ourselves?

Dr James Ussher knows something about infectious diseases. Not because he has been burdened with disease — he cannot recall the last time he had a serious infection — but because he is an immunologist and clinical microbiologist; an infectious disease wikipedia on legs.

He says the "why" can be broken down into several distinct causes.

Changing social behaviour is one.

"Syphilis was something that 15 years ago we rarely saw. But it has re-emerged," Dr Ussher says. "It is

likely to do with sexual behaviour and [the disease] getting into communities that change partners frequently."

It has mostly been confined to gay men but there has been some "spill over" into the heterosexual population in recent times.

If promiscuous sex is no surprise, travel might be.

During the past four decades, the number of people crossing borders by airplane has increased from 227 million a year to more than one billion a year.

That has allowed diseases that had been quietly ticking over in one location to find new victims with little immunity. Good examples are bird flu and swine flu. And zika, the virus that can cause birth defects and which threatened last year's Olympic Games in Rio de Janeiro.

"Zika was recognised in the middle of last century. But it wasn't really associated with severe clinical syndrome . . . until it got into new populations that were previously unimmune."

There were about a dozen cases in New Zealand last year, all brought home by holidaymakers.

Whether it is zika or some other exotic illness, watch out for more of the same: international travel is set to increase by 35% in the next decade.

Climate change is also playing a role. In the same way tropical cyclones have been pushing further south, the vectors (aka small beasts) that carry diseases are finding they can live in environments they used to find inhospitable.

We have not yet seen much of this phenomenon in New Zealand,



University of Otago clinical microbiologist Dr James Ussher says everything from unsafe sex to climate change is contributing to the re-emergence of a raft of old diseases. PHOTO: SUPPLIED



Dr Ben Wheeler, of the Dunedin School of Medicine, says ever-changing food and health fads have helped ensure the cyclic return of rickets. PHOTO: OMI FILES

but mosquitoes, for example, are now bringing dengue fever and Japanese encephalitis to northern Australia.

Of greater immediate concern in this country, other diseases are being given a new lease of life by growing inequality.

One hundred years ago, rheumatic fever, which can damage hearts, was a significant health problem worldwide. Today, in New Zealand, deprivation and its bed-fellow, over-crowding, are keeping rheumatic fever alive and kicking, ensuring the contagious strep throat infection that causes rheumatic fever has every chance of being spread around family and friends crammed into inadequate housing.

Cases of rheumatic fever are 19-times higher among Maori and

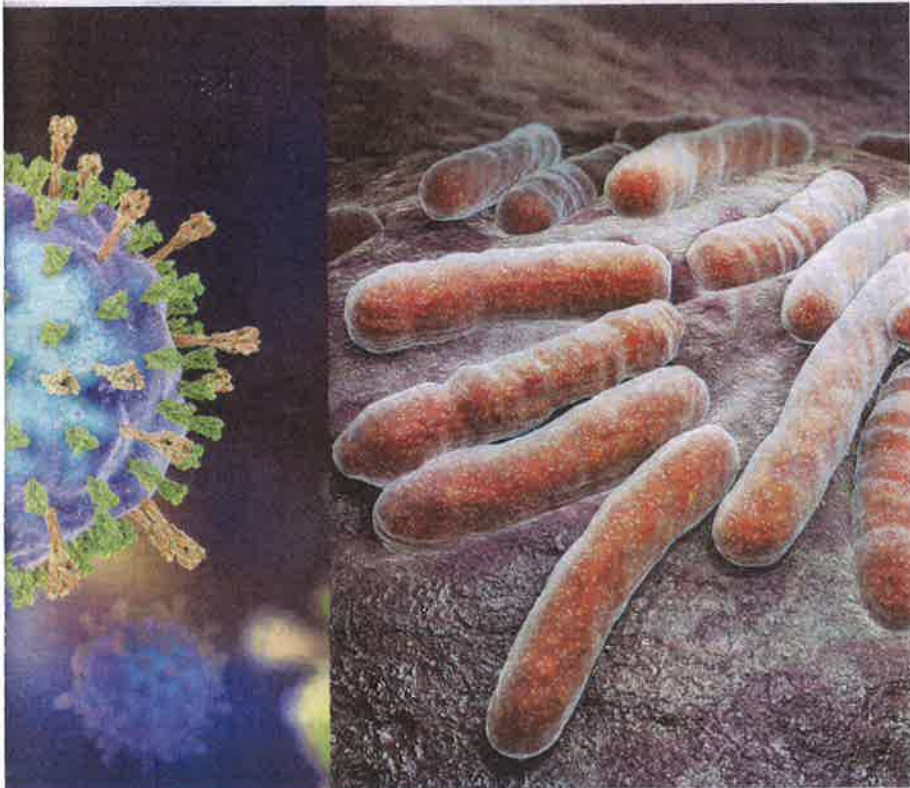
40-times higher among Pacific Islanders than among the rest of the population, Dr Ussher says.

Sex, travel, climate change, over-crowding . . . there are three or four to go.

For nine decades, swathes of the world have sat safe under the protective umbrella of antibiotics. Bacteria that used to kill or maim could be eliminated with a simple course of antibacterial medicine.

But antibiotics have been over-used in agriculture and have been over-prescribed and incorrectly used by humans. The result: more and more bugs developing resistance to the former miracle cures.

Bugs such as tuberculosis (TB). TB can do serious damage to



ILLUSTRATIONS: GETTY IMAGES



Dr Harriette Carr, who is Deputy Director of Public Health for the Ministry of Health, says this winter's flu vaccine covers four strains, but it is still too early to know how effective it will be. PHOTO: SUPPLIED



Dunedin microbiologist Dr Htin Aung has been given a \$500,000 grant to help New Zealand help his home country Myanmar and the world fight tuberculosis. PHOTO: ODF FILES



Prof Kurt Krause, of the University of Otago, says mumps is making strides because people have not been properly immunised. PHOTO: ODF FILES

sufferers' lungs and can even kill those with low immunity.

If caught in time, it can usually be successfully treated. But more countries are finding that chunks of their antibiotic arsenal are ineffective against TB.

Cases of multi-drug resistant TB and the next step up, extensively drug-resistant TB, are being reported in Brazil, China, Myanmar and India among others. Russian prisons are a particularly good place to catch a nasty case of drug-resistant TB.

In New Zealand, there are about 300 cases of TB each year. About 80% of those diagnosed were born overseas.

Of course, it is not just TB. Dr Ussher says incidences of other super-bugs, such as multi-drug resistant gram negative bacteria

that are resistant to carbapenems, one of the drugs of last resort, have shot up five-fold in this country in recent years.

Mumps illustrates two reasons why old diseases are resurgent, Dr Ussher says.

A two-dose combination vaccine is available for mumps, measles and rubella (MMR). It is given to Kiwi kids at 15 months old and when they turn 4.

Mumps can cause fever, headache and muscle aches. In men, it can cause one testicle to swell painfully. Very occasionally, it can cause infertility and permanent hearing loss.

Usually, a few cases of mumps occur each year, but in 2017 an outbreak of mumps affected more than 700 people. The country, particularly the North Island, is in

the grip of the worst mumps outbreak in decades.

Those afflicted included four All Blacks: Luke Romano, Jack Goodhue, Rieko Ioane and Ardie Savea. How they suffered has not been divulged.

The reason for the mumps outbreak is two-fold, Dr Ussher says.

Firstly, the vaccine is not 100% effective. "It is very good, but it's not 100%, especially if you haven't had both doses."

Secondly, there is a pool of people in New Zealand who have not been vaccinated.

A 2009 Unicef report showed New Zealand ranked 33 out of 35 among developed nations for measles vaccinations.

Since then, the immunisation

rate has been lifted to 92%.

"It goes back to misinformation ... in the 1990s. [There were] misplaced concerns around risks from vaccines, which led to a drop in our coverage rates."

It means there are a group who are now in their 20s who are susceptible to a range of illnesses that their parents and their children are immunised against.

Dr Ben Wheeler adds one more reason why some diseases are back on the playlist — short memories.

Dr Wheeler, is a researcher in the Dunedin School of Medicine's Department of Women's and Children's Health.

He has been studying rickets, a disease caused by a lack of vitamin D that can lead to seizures and skeletal deformity.

Fatty fish and cheese are two sources of naturally occurring vitamin D. But sunlight on skin is the best way to get all the cholecalciferol (vitamin D3) that bones need.

Rickets was warping bodies in large numbers in the smoggy, industrial cities of 19th-century Europe and North America.

Now it's back. In 2015, Dr Wheeler said rickets had been found in almost 60 New Zealand children. Further research released this year, says the risk of vitamin D deficiency is highest for women and babies in the lower South Island.

But it is not the first recurrence, Dr Wheeler says.

Early last century, people realised sunlight and spoonfuls of cod liver oil could keep rickets at bay.

By the 1960s, however, cod liver oil was unfashionable. At the same time, migration to Western countries saw people with dark skin colouring, which does not produce vit D as quickly as fairer skin, struggling to get enough sunlight in their cooler, cloudier adopted homelands.

Rickets increased, followed by sales of vitamin supplements.

But memories are short, Dr Wheeler says. Since the new millennium, vitamin supplement use has again ebbed and there has been push-back on food fortification. There has also been more immigration. And legitimate concern about skin cancer is seeing less skin exposed to the sun.

Threatened on all sides by resurgent disease, what can we do?

When it comes to rickets, taking a vitamin D supplement and safely getting sun on skin are obvious steps. People are most susceptible to rickets in the first three years of life. So, Dr Wheeler is calling for a fully funded vitamin D supplement for all women and their children during pregnancy and lactation.

Unfortunately, tackling influenza, in its various forms, is a game of evolutionary roulette.

Stopping international travel is impossible. So scientists developing 'flu vaccines try to second guess how the various strains will mutate, which will be the biggest health risk and where

around the globe they will go.

Dr Harriette Carr, who is Deputy Director of Public Health for the Ministry of Health, says this year's flu vaccine will protect against four strains, including a newer strain of A(H3N2) than was used in the northern hemisphere vaccine.

Getting vaccinated before winter is recommended, but it is no guarantee.

"As we don't yet know whether the virus will evolve again before this winter, it's too early to predict how effective the vaccine will be," Dr Carr says.

Prof Kurt Krause says the message on mumps is simple; get good information and get immunised.

Research from more than 20 years ago that suggested the MMR vaccine might cause autism has been discredited, Prof Krause, who is an infectious diseases researcher at the University of Otago, says.

"You want to make sure that young people get vaccinated and make sure the community maintains herd immunity — enough immunity so that if there is a small outbreak it cannot spread," he says.

Battling TB in New Zealand is primarily a matter of taking on TB globally, Dr Htin Aung says.

The University of Otago researcher has been given a \$500,000 Health Research Council grant to develop next-generation diagnostic tools that will help more people get quicker and cheaper TB testing.

In a few years, that should mean more timely, targeted treatment, reducing the spread of the disease and helping stem the rising tide of drug-resistant TB.

"Through this, New Zealand is being a good global citizen and helping protect itself," Dr Aung says.

That sounds positive.

Do not, however, expect syphilis to die off any time soon.

If it is not treated, syphilis can be serious, even deadly. That is why Martin gets six-monthly checks.

He thinks he has probably had the STI trifecta; gonorrhoea, chlamydia and syphilis.

Having had three run-ins with syphilis, most recently in the past couple of years, he says it has changed his approach, a little.

"I now have a bit more of a dialogue rather than going in blind and hoping no-one has anything," Martin says.

But the penicillin treatment, although sore, is short, sharp and effective.

"You get two jabs in the butt. A couple of days later, you get it again and that's it."

Ironically, that has helped syphilis become a pandemic, he believes.

"People are complacent ... They know they can get treated. It is part of the solution and part of the problem."

"It curbs your behaviour a little. But when you're out there to have fun, these are just the things that get in the way sometimes."