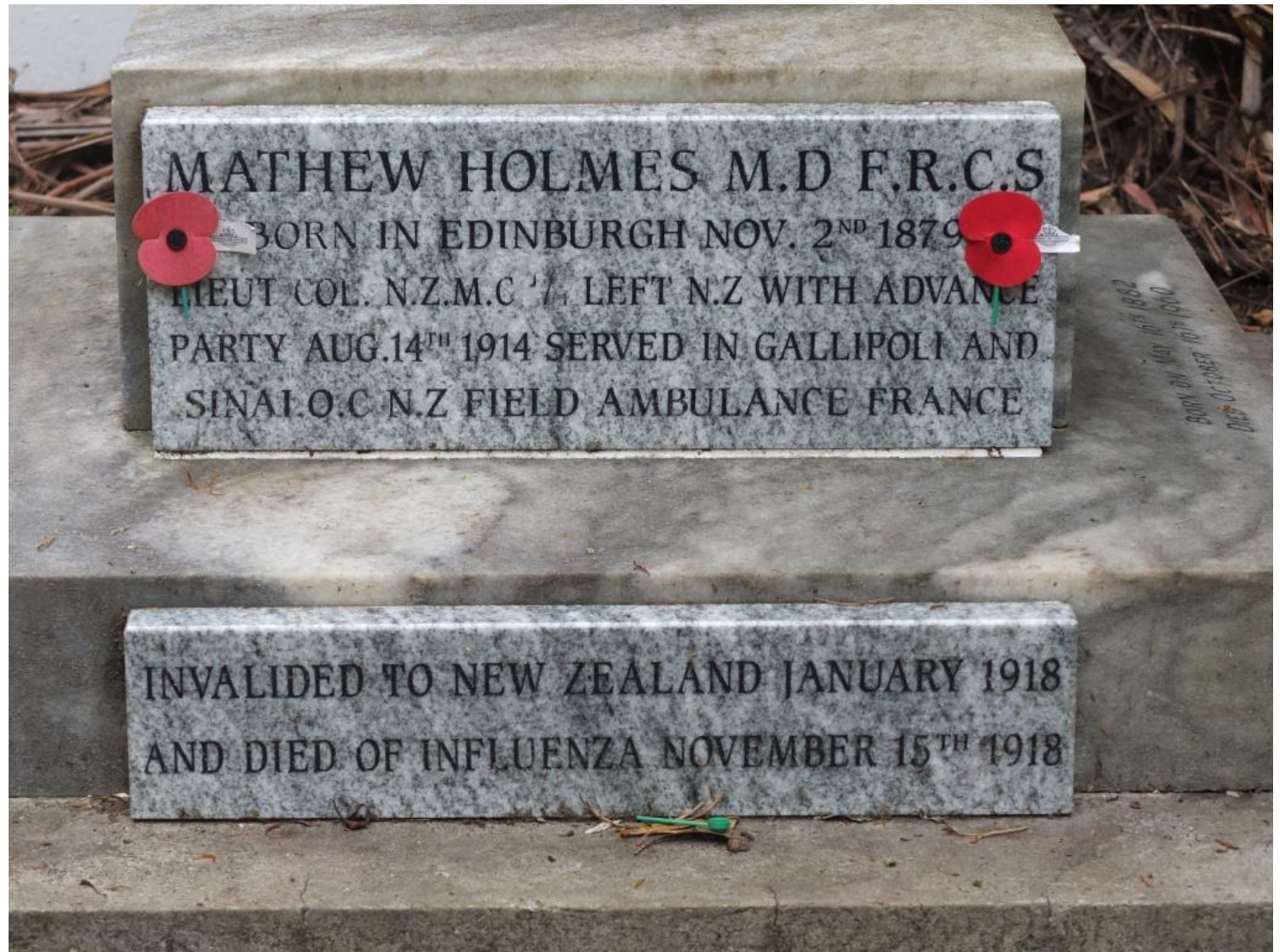


Public Health Summer School public lecture 7 Feb 2018

Why do we still need to know about the 1918 influenza pandemic?

Professor Geoffrey W. Rice FRHistS
University of Canterbury



Dr Mathew Holmes is buried in Karori Cemetery

Why should we remember what happened in the 1918 influenza pandemic?

Because there is still the risk of another major flu pandemic

Mass jet travel has made the world a viral village:
pandemic near-misses in 1997 and 2009

Lessons from the last big flu pandemic will help us make better decisions when coping with the next one

A repeat of the 'Spanish' flu death rate in NZ could see 30,000 deaths

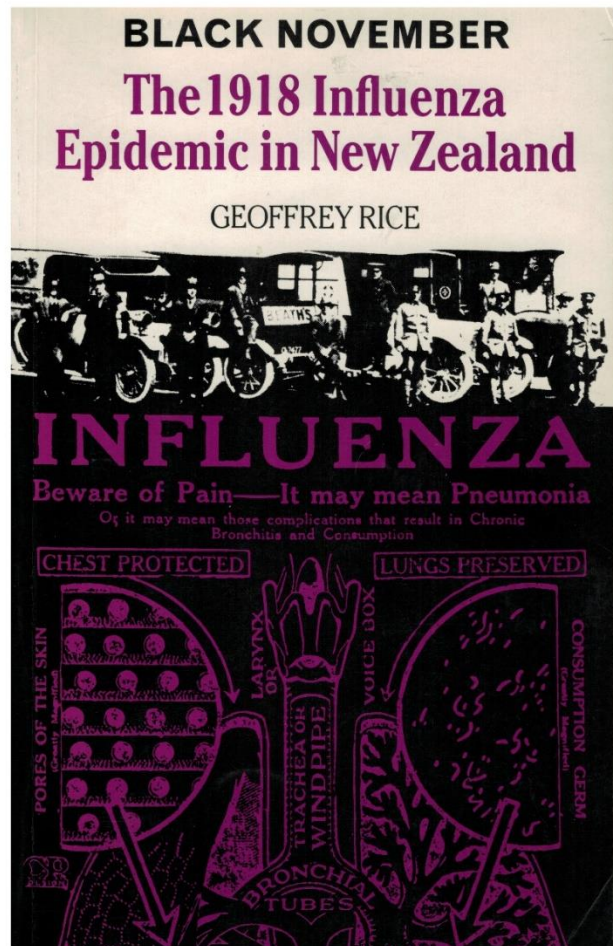
How many people died in the 1918 flu?

Jordan (1927) estimated 21 million

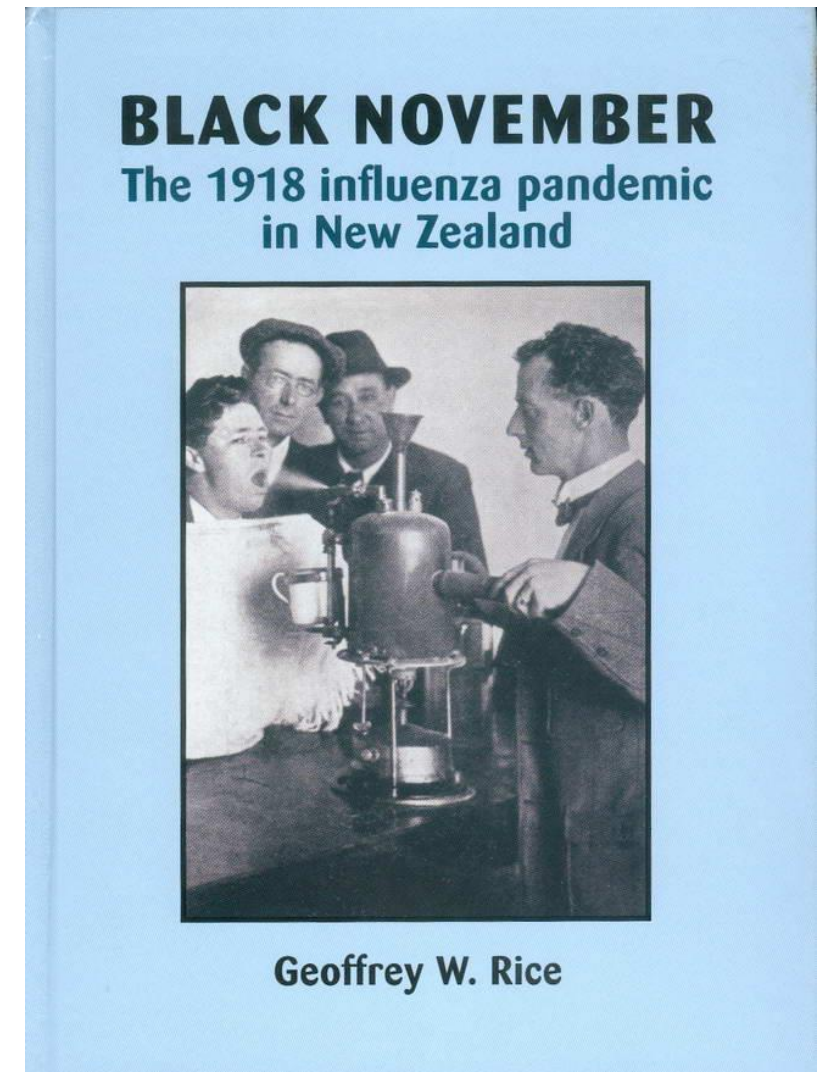
First World War killed 10 million soldiers, 7 to 10 million civilians

Then the world seemed to forget the 1918 flu until Al Crosby's book *Epidemic and Peace* (1976) sparked the wave of modern research - which still grows!

New Zealand was early in the field . . .



1988 small textbook, no photos



2005 enlarged, illustrated

Black November remains the only analysis of a whole country's 1918 flu mortality based on individual death certificates

Rice (1988): registered Pakeha pandemic-related deaths: 6,413

Māori registered deaths (incomplete) 1,679

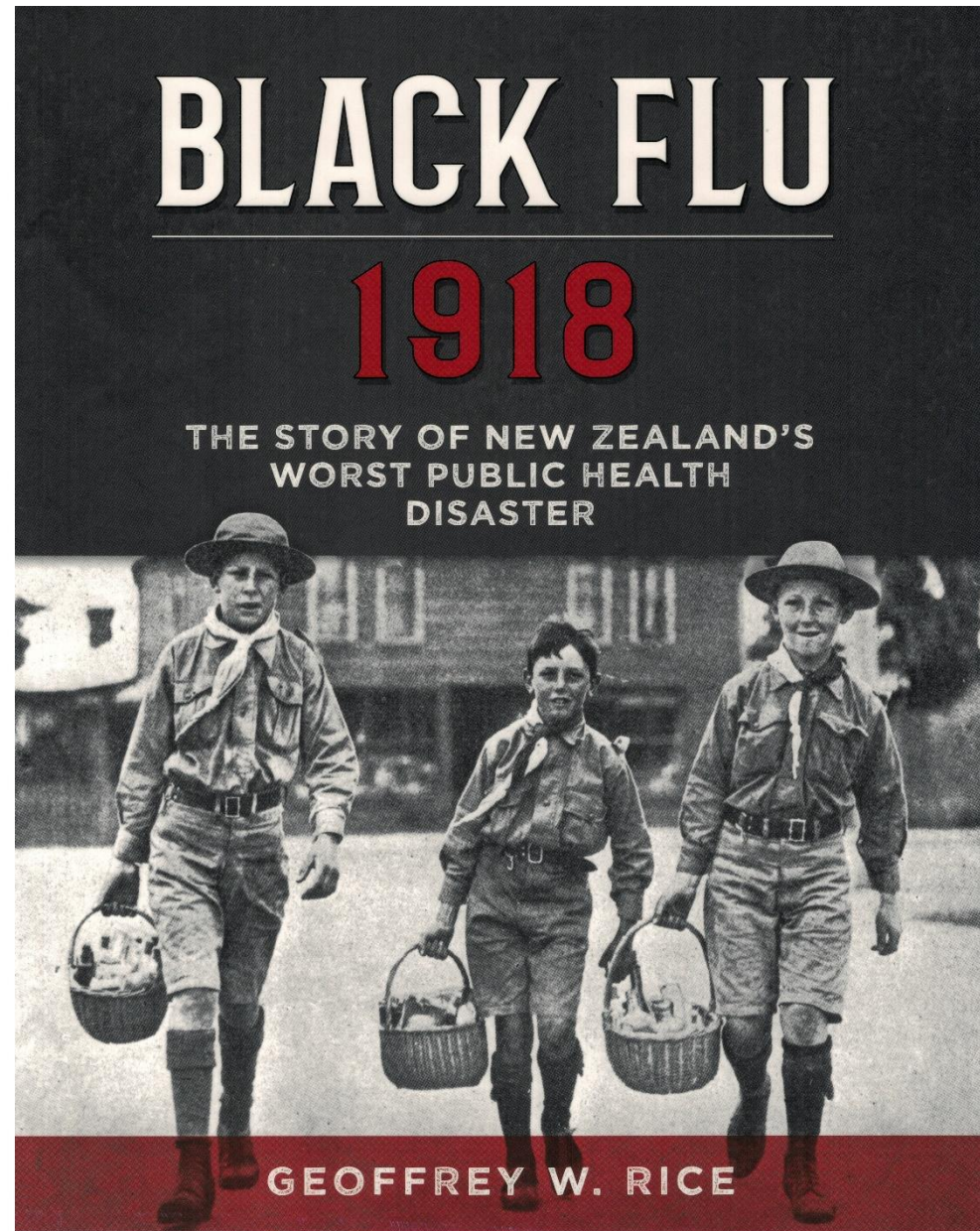
+ reported not registered: 481 = 2,160 Grand total 8,573

Possibly 200 Māori deaths unrecorded in Waikato, Northland

Summers (2013) found 258 more military deaths: NZ total 8,831

Rice (2017) now suggests 9,000 (NZ lost 18,000 soldiers in WWI)

2017 condensed &
updated, aimed at a
popular readership





Zinc sulphate inhalation: more harm than good?



Temporary influenza hospitals: havens of peace or death traps?



BUSINESS IS GOOD!

Profiteering from a crisis?

NZ Observer 23 Nov 1918

Johnson & Mueller (2002) estimated 50 million deaths

Murray & Lopez (2006) raised possibility of 60 million

Rates from Australia's 2.6 per 1000 to Western Samoa's 220 per 1000 suggest an 84-fold range of death rates

Some journalists have suggested 100 million deaths

Let's keep it in perspective: only 2-3% global death rate in 1918



The Black Death
(1348-52) killed a **THIRD**
of Europe's population
and **HALF** of England's
population: bubonic or
pneumonic plague?

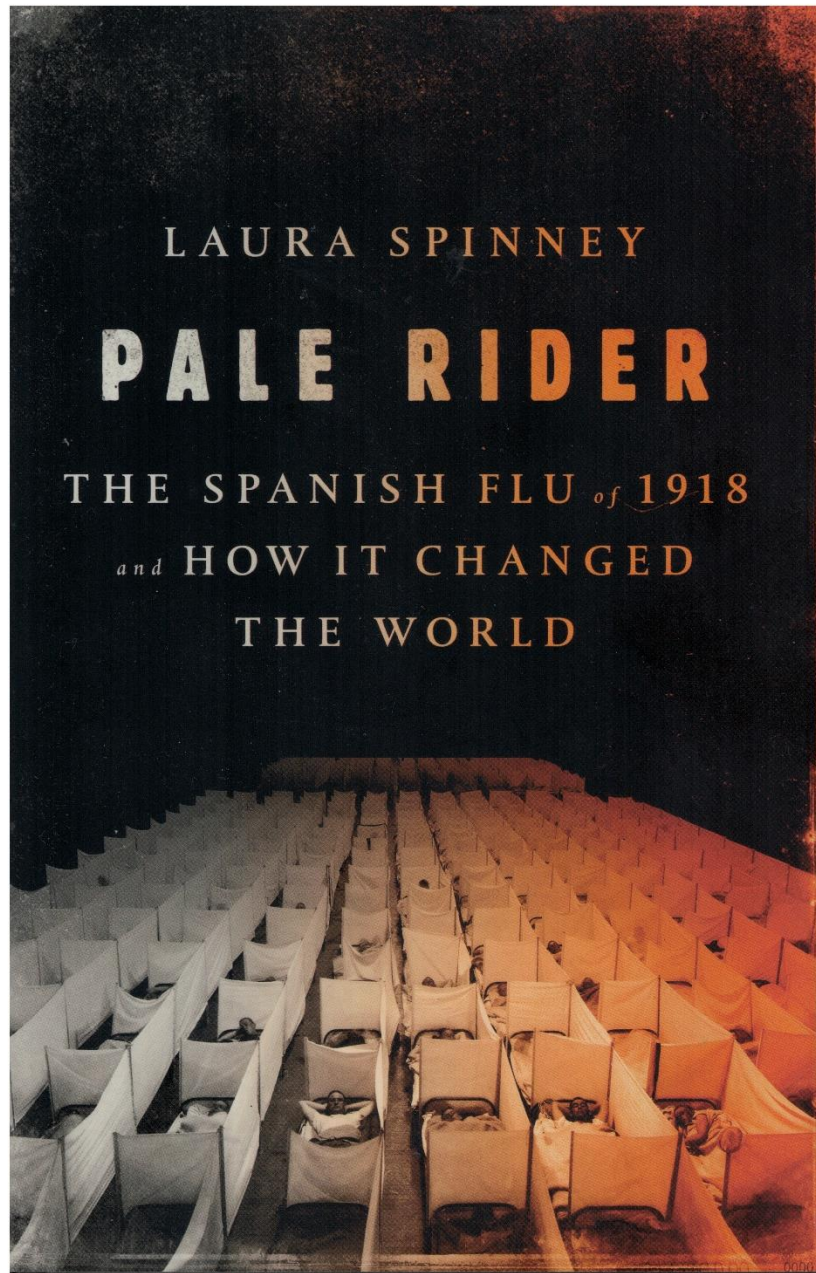
World's worst-recorded
pandemic of any disease

Surge in scholarship after 1987, when Taubenberger et. al. reconstructed genetic structure of A/H1N1 virus of 1918 from preserved lung tissue

Now over 900 articles in medical/scientific journals mention the 1918 influenza pandemic

Phillips (2014) has counted 50 books/theses & 200 historical or social science articles since 2004, seven TV documentaries

Key part of plot in *Downton Abbey*



Latest global survey:

Laura Spinney's *Pale Rider* (2017)

- 'a protean event' with extremely diverse outcomes
- war ensured global diffusion
- affected the end of First World War (could have been a truce rather than a defeat for Germany)

A freak of nature? Certainly a bizarre influenza pandemic

Severe second wave in late 1918 *simultaneous* in northern and southern hemispheres

Influenza usually kills the very young and the elderly: this one often spared the elderly, but secondary pneumonia killed many *young adults* 25-45 years

In New Zealand, why did males die at *double* the rate of females in the young adult age groups?

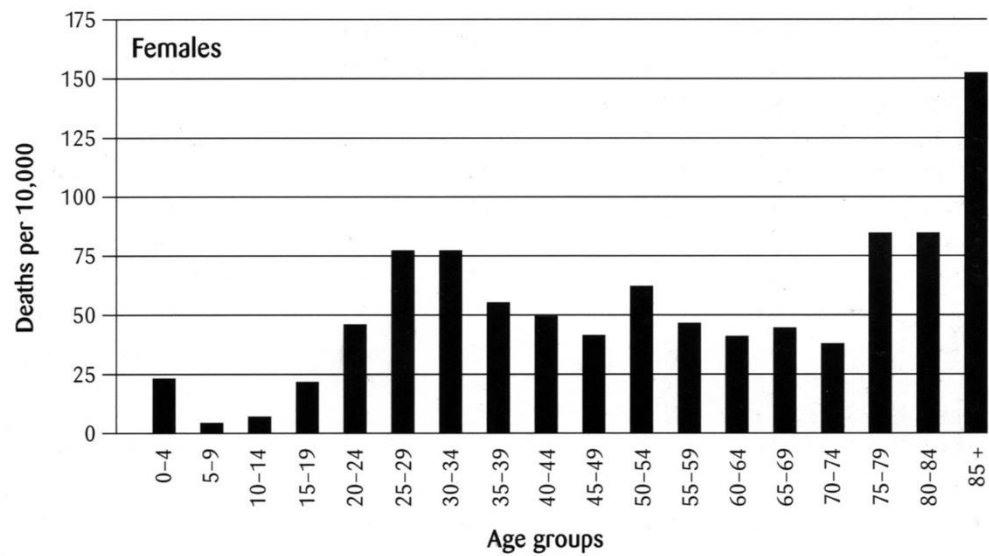
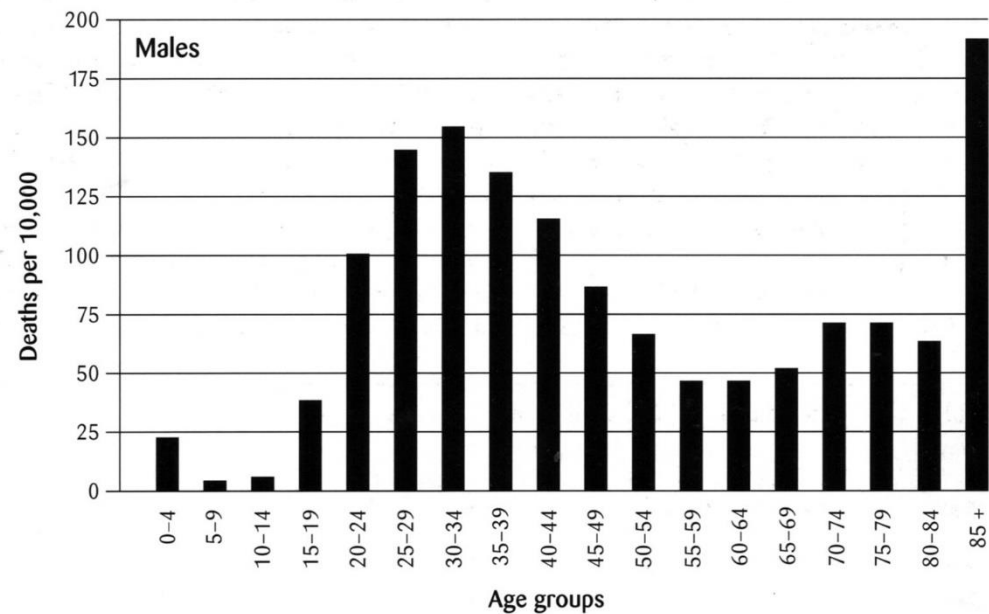


Figure 10.1 Age-specific death rates (European)

Flu diversity in New Zealand:

Some places had low death rates: Nelson, Timaru, Westport

Some had very high rates: Inglewood, Taumarunui, Nightcaps

Wellington had nearly double the death rate of Christchurch:
why?

Māori died at 8 times the Pakeha death rate: why?

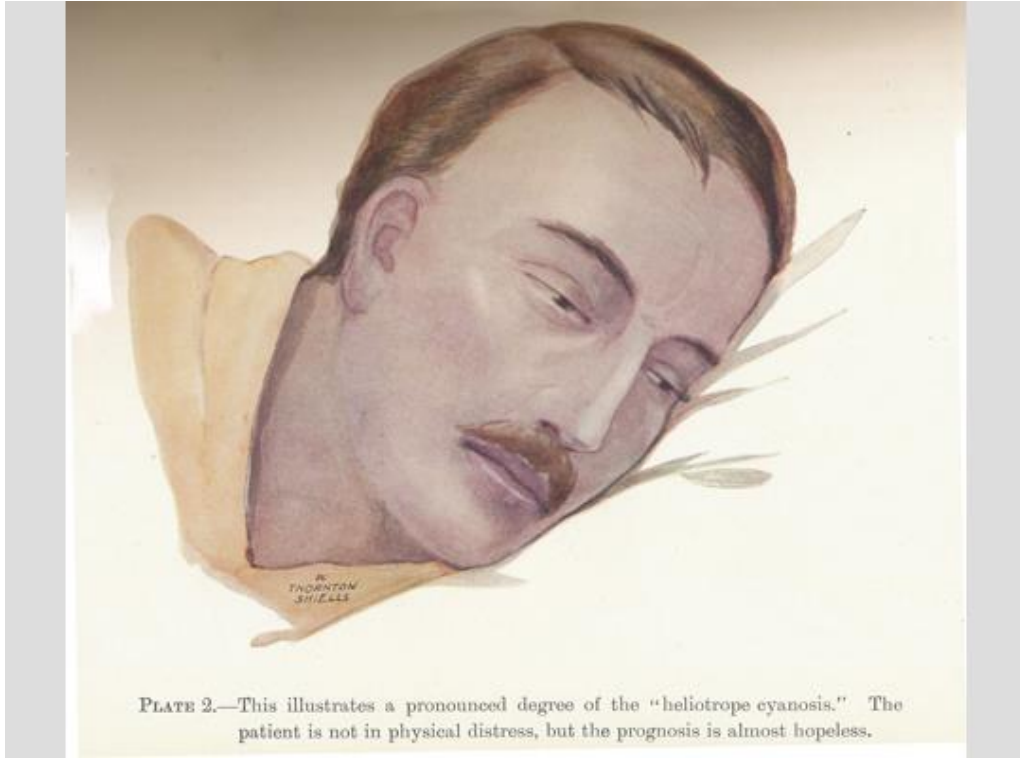


Recent research suggests variations in death rates probably caused by patchy immunity from mild herald wave in mid-1918, and pre-existing medical conditions such as TB

Remote Māori communities may have missed the mild wave in 1918

Poor standards of housing, nutrition, sanitation made them a highly vulnerable population

Māori had high rates of respiratory disease, TB and tobacco smoking



Why did the bodies turn black?

cyanosis from pneumonia

As inflamed lungs fill with blood and fluid, oxygen exchange reduced, skin turns dusky purple, especially lips and ears

Epistaxis common: massive nose-bleeds (these cases often survived) with loss of hair and finger-nails

One puzzle has a new explanation: young adult deaths

Shanks & Brundage (2012), Gagnon et.al. (2013) noted peak age at death of about 28 years in North America: born in 1890 during the 1889-92 'Russian' influenza pandemic: A/H3N8?

Early-life exposure to this virus may have damaged T-cells in immune systems: then a different virus A/H1N1 in 1918 triggered 'cytokine storm' overreaction: worst in big strong men

Plausible, neat, satisfying solution

How well will we cope with a future influenza pandemic?

Early warning: global influenza surveillance and warning systems

Annual flu vaccine probably won't cover a new virus

Anti-viral drugs (Tamiflu) need to be taken quickly: 48 hrs

Antibiotics for secondary bacterial pneumonia

But will we have enough? Who will administer them?

Expect many people to get sick all at once in a pandemic

Hospitals will be overwhelmed (as in 1918): doctors, nurses, medical staff will be among those staying in bed

Who decides who gets life-saving high-tech treatment in A&E?

Normal medical-centre services may not be available

Public transport may be disrupted (as in 1918); also taxi-drivers and ambulance services

A pandemic is a very different sort of emergency from a flood or an earthquake

If the pandemic persists over several weeks, expect food shortages and loss of essential services (like rubbish collection)

Convalescents will need to be fed (as in 1918)

Plan for it NOW: be prepared, in households, in communities



Make masks compulsory, as in US and Japan in 1918?

Best advice if you get the flu: go home, go to bed, stay there!

Take plenty of fluids (NOT alcohol), and pain-killers (but not too much aspirin)

PNEUMONIA is the biggest danger: what are its signs?

Initial shivering fit; bodily stiffness; stabbing pains in chest; shallow irregular breathing; extreme prostration; high fever; dry cough; blood-streaked sputum

How to treat bacterial pneumonia without antibiotics?

(Viral pneumonia has to run its course anyway)

The key to survival is GOOD NURSING: stay in bed, but you need someone to look after you - family, friend or neighbour

We need ads on TV with practical advice for home nursing (like those Civil Defence earthquake ads)



In 1918 NZ was at war: patriotic committees became epidemic committees

Public 'brain-washed' about duty and sacrifice, so neighbours risked their own lives to help those in need

NZ society has changed a lot since 1918: would we cope as well today?

Communications are better: texting, emails, Facebook, Twitter: let friends and neighbours know if you get sick

Stockpiling antibiotics is expensive: short shelf life

Govt. & health boards need to consider cost-effective options:

- increase pneumococcal vaccination rates for adults?
- improve housing to reduce overcrowding?
- helplines with advice for severe cases
- reduce poverty!

NZ has hundreds of war memorials: but no national memorial to the 1918 influenza pandemic

- 9,000 doctors & nurses, soldiers & civilians died
- public needs reminders to be educated about 1918
- schools need to teach appropriate disaster responses



Dr Margaret Cruickshank's statue,
Waimate, South Canterbury

First woman to enter general
practice in NZ

Died from flu & exhaustion in Nov
1918

Still revered by her local community

Two big lessons from 1918: self-reliance & prompt response

Don't wait for help to come: be self-reliant and pro-active:
organise your neighbourhood, share supplies, get volunteers

When sickness strikes, look after your own family first, then
check on the neighbours

Revive neighbourhood watch groups

Get to know your neighbours: they may save your life.



Let's hope it's only flu: we can cope with that.

It might be SARS or Ebola or something we haven't heard of yet.

And keep smiling, however rotten you feel.

Be nice to those caring for you!

Prompt response

Towns in 1918 that organised early & well kept death rates low

Ministry of Health needs a critical mass of expertise to ensure prompt response to a crisis

We need effective surveillance systems to guide response

Regular exercises to maintain response capacity (e.g. 'Pomare')

Flexibility to cope with different infectious diseases

SUMMARY

1918 flu was the highest-mortality natural disaster in NZ history

It could happen again, from influenza or some entirely new pathogen

Preparing for such an event has benefits beyond biosecurity:

- it helps strengthen communities
- it makes government agencies more flexible and responsive
- it supports a strong national public health capacity which will benefit other areas of population health