



A 100 years ago today - the likely first NZ death from the 1918 influenza pandemic

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The 1918 influenza pandemic began to kill New Zealanders 100 years ago today. Ultimately it killed 9000 NZ citizens and so is by far the largest natural disaster to hit this country. In this blog we reflect on this event and draw links with the present day pandemic risks (including from synthetic bioweapons). We highlight the importance of continuing to invest in public health infrastructure and pandemic preparedness and planning.



The start of this pandemic was the beginning of the worst single natural disaster to kill New Zealanders in recorded history. Around 9000 NZ citizens died – as per the updated estimate in the recent book by historian Prof Geoffrey Rice [1]. In comparison, an estimated 258 people died in the Hawkes Bay earthquake of 1931 (the next biggest natural hazard event since 1900 for NZ [2]).

In previous historical/epidemiological work we have defined the likely pandemic period (for the particularly serious “second wave”) for the NZ population as starting on 27 August 1918 in the Northern Hemisphere [3]. This timing would mean that the first New Zealander likely to have died from pandemic influenza was Robert Gordon Torrance, a 25-year-old soldier located in France. He officially “died of pneumonia” on 28 August 1918 according to his [record](#) in the Cenotaph database (see photo below and details in his military files in the Archway database). It is likely that his death was influenza-related as in the pandemic period a large majority of the deaths from sickness in the NZ military were due to this new pandemic virus. Nevertheless, we can’t be absolutely sure that it was the pandemic virus for this particular soldier as occasional deaths from other causes of pneumonia did kill NZ soldiers in this era eg, see this study for deaths in the preceding year [4].

Shortly after signs of the pandemic were appearing in Western Europe, there was the outbreak of it on the NZ troopship [Tahiti](#) (after calling into port in Sierra Leone on its way to the UK) [5]. In this outbreak, the first death was on 1 September 1918, with another 76 deaths in subsequent days and weeks. Crowded cabin accommodation seemed to be one of the risk factors for death in this historical study we published [5] (and see also this diary of an on-board soldier [6]). For military personnel in general, having a pre-existing chronic disease was found to be one of several risk factors for dying in the pandemic [7].

There was a disproportionately high death rate for Māori ([3, 8-10]) – probably largely reflecting higher rates of poverty, household crowding and prevalent diseases such as tuberculosis. Also New Zealanders in their late 20s had high disease rates, possibly related to immunological impacts from infection in a preceding 1889-92 influenza pandemic [11]. The pandemic's impact on crowded military training camps was also relatively severe [3] [12]. Doctors and nurses also died in the pandemic – including NZ's first registered woman doctor, Dr Margaret Cruickshank (see photo below and this [blog](#)).

Good organisation of nursing care and basic support in cities such as Christchurch may have lowered the mortality rate (eg, in comparison to Wellington) [1]. But in general there were few successful control measures (eg, a rare one conducted in the Coromandel [13]). In a comparison study done with another island country (Iceland), we noted successful use of travel restrictions in the Icelandic setting [14]. Rurality was somewhat protective against dying in the pandemic for the civilian population [15], probably reflecting a lower risk of becoming infected in the first place.

Is there a risk of future influenza pandemics?

Absolutely – since there are typically several influenza pandemics per century, although none are known to have been as severe as the 1918/19 one. While mixing of livestock in “wet markets” (a known risk factor for the production of new influenza strains) may have reduced in some parts of the world [16], there are still many places where pigs and poultry cohabit. This can result in pigs being a “mixing vessel” for generating new influenza strains that can go on to infect humans. There is also some evidence of increased emergence of new avian influenza strains in recent years [17], and of course there is the increased risk of rapid dissemination of new pandemic strains with the continuing growth of international jet travel.

Pandemics can also arise from other diseases, as we saw when SARS emerged, and the risk of agents associated with bioterrorism exists (with some potential for spread to NZ [18]). There is even a risk that genetically engineered microbes will escape from laboratories (including those conducting research into bioweapon defence).

What should be done by the NZ Government and by individuals?

The NZ Government needs to reduce vulnerabilities to future pandemics by:

- Continuing to work on reducing poverty and household crowding.
- Doing more to prevent chronic diseases (eg, by accelerating progress towards the Smokefree 2025 goal [see this blog on the [Action Plan](#)] and highly cost-effective ways to reduce cardiovascular disease in NZ eg, by reducing dietary salt in processed foods [19-21]).
- Strengthening public health capacity of the Ministry of Health – which has been [weakened over recent years](#).
- Making better use of existing pandemic memorials in NZ to educate people about the continuing influenza pandemic threat (see: [22], [this blog](#) and this newly created giant [mural](#) of Dr Margaret Cruickshank).



More specifically, the **Ministry of Health** needs to continue to regularly revise and upgrade NZ's pandemic planning documents. These documents need to reflect evidence from the new studies that are regularly published on pandemic impact and control, including from the most recent 2009 pandemic (for a review of this pandemic in NZ see here: [23]). NZ also needs to consider research on such issues as:

- Studying the cost-effectiveness of increasing pneumococcal vaccination uptake in NZ adults in the pre-pandemic period, especially those with chronic conditions.
- Investigating the cost-effectiveness of enhancing antibiotic storage in NZ in the pre-pandemic period. More work is also probably needed on how to prioritise limited supplies of such treatments (on the ethics and practicalities of access).
- Reviewing the stockpiling of antivirals in the pre-pandemic period (a process which we believe is actually underway by the Ministry). Previous work on the cost-effectiveness of such a stockpile (which includes NZ data [24]) probably needs to be updated.
- Having plans to run mass media campaigns to enhance public hygiene levels before the next pandemic (see these NZ studies on suboptimal respiratory hygiene [25] and hand hygiene [26] behaviours during the last pandemic in NZ in 2009).
- The value of upgrading existing border closure information [27] to give more detail around rapidly closing the border if a severe pandemic is threatening (see these two studies done for NZ that consider border closure: [28] [29]). This may also need new emergency laws (to ensure the Prime Minister and Cabinet are protected from legal action and that key industries such as tourism can be compensated financially to speed their post-disaster recovery).

Individuals could consider the following:

- Building pandemic preparedness into their routine home civil defence preparedness plans (including adequate supplies of stored food etc – see this study we did on low-cost emergency food storage [30]).
- Consider talking with a family doctor about getting the pneumococcal vaccine (especially for adults with an existing chronic illness or those over 65 years of age).
- Consider getting to know your neighbours better and potentially being prepared in a pandemic to help them out in various low risk ways if they become sick (eg, checking on them by phone/email and leaving food supplies at the door).
- Ensuring elderly relatives have access to tools that help with communication and getting messages from the government eg, smartphones and internet access.

In summary, the 100th anniversary of the 1918 influenza pandemic is a valuable reminder that the threat of such pandemics still exists. Fortunately, there is a range of measures that can be taken by the government and by individuals to reduce and manage the risks.

Lead image: Alexander Turnbull Library collection, PAColl-7489-69

References

1. Rice GW: Black Flu 1918: The story of New Zealand's worst public health disaster. Christchurch, Canterbury University Press, 2017.
2. Wilson N, Morales A, Guy N, Thomson G. Marked decline of sudden mass fatality events in New Zealand for the 1900 to 2015 period: The basic epidemiology. Aust N Z J Public Health. 2017;41:275-279.
3. Summers JA, Shanks GD, Baker MG, Wilson N. Severe impact of the 1918-19 pandemic influenza in a national military force. N Z Med J. 2013;126(1378):36-47.
4. Wilson N, Harper G. New Zealand's peak year for wartime mortality burden: the important role of the Battles of Messines and Third Ypres (Passchendaele) in 1917. N Z Med J. 2017;130(1463):58-62.
5. Summers JA, Wilson N, Baker MG, Shanks GD. Mortality risk factors for pandemic influenza on New Zealand troop ship, 1918. Emerg Infect Dis. 2010;16(12):1931-1937.
6. Summers JA. Pandemic influenza outbreak on a troop ship-diary of a soldier in 1918. Emerg Infect Dis. 2012;18(11):1900-1903.
7. Summers JA, Stanley J, Baker MG, Wilson N. Risk factors for death from pandemic influenza in 1918-1919: a case-control study. Influenza Other Respir Viruses. 2014;8:329-338.
8. Pool DI. The effects of the 1918 pandemic of influenza on the Maori population of New Zealand. Bull Hist Med. 1973;47(3):273-281.
9. Rice G: Black November: The 1918 influenza pandemic in New Zealand. Christchurch: Canterbury University Press; 2005.
10. Wilson N, Telfar Barnard L, Summers J, Shanks G, Baker M. Differential mortality by ethnicity in 3 influenza pandemics over a century, New Zealand. Emerg Infect Dis. 2012;18:71-77.
11. Wilson N, Oliver J, Rice G, Summers JA, Baker MG, Waller M et al. Age-specific mortality during the 1918-19 influenza pandemic and possible relationship to the 1889-92 influenza pandemic. J Infect Dis. 2014;210(6):993-995.
12. Sertsou G, Wilson N, Baker M, Nelson P, Roberts MG. Key transmission parameters of an institutional outbreak during the 1918 influenza pandemic estimated by mathematical modelling. Theor Biol Med Model. 2006;3:38.
13. Wilson N, Rice G, Thomson G, Baker M. Re-evaluating a local public health control

measure used in New Zealand for the pandemic influenza of 1918. *N Z Med J*. 2005;118(1224):U1714.

14. Summers JA, Wilson N, Baker MG, Gottfredsson M. The influenza pandemic of 1918-1919 in two remote island nations: Iceland and New Zealand. *N Z Med J*. 2013;126(1373):74-80.
15. McSweeney K, Colman A, Fancourt N, Parnell M, Stantiall S, Rice G *et al*. Was rurality protective in the 1918 influenza pandemic in New Zealand? *N Z Med J*. 2007;120(1256):U2579.
16. Yuan J, Tang X, Yang Z, Wang M, Zheng B. Enhanced disinfection and regular closure of wet markets reduced the risk of avian influenza A virus transmission. *Clin Infect Dis*. 2014;58(7):1037-1038.
17. Bui CM, Chughtai AA, Adam DC, MacIntyre CR. An overview of the epidemiology and emergence of influenza A infection in humans over time. *Arch Public Health*. 2017;75:15.
18. Wilson N, Lush D. Bioterrorism in the Northern Hemisphere and potential impact on New Zealand. *N Z Med J*. 2002;115(1154):247-251.
19. Nghiem N, Blakely T, Cobiack LJ, Cleghorn CL, Wilson N. The health gains and cost savings of dietary salt reduction interventions, with equity and age distributional aspects. *BMC Public Health*. 2016;16(1):423.
20. Nghiem N, Blakely T, Cobiack LJ, Pearson AL, Wilson N. Health and economic impacts of eight different dietary salt reduction interventions. *PLoS One*. 2015;10(4):e0123915.
21. Wilson N, Nghiem N, Eyles H, Mhurchu CN, Shields E, Cobiack LJ *et al*. Modeling health gains and cost savings for ten dietary salt reduction targets. *Nutr J*. 2016;15:44.
22. Wilson N, Ferguson C, Rice G, Baker MG, Schrader B, Clement C *et al*. Remembering the 1918 influenza pandemic: national survey of memorials and scope for enhancing educational value around pandemic preparedness. *N Z Med J*. 2017;130(1465):53-70.
23. Wilson N, Summers JA, Baker MG. The 2009 influenza pandemic: a review of the strengths and weaknesses of the health sector response in New Zealand. *N Z Med J*. 2012;125(1365):54-66.
24. Carrasco LR, Lee VJ, Chen MI, Matchar DB, Thompson JP, Cook AR. Strategies for antiviral stockpiling for future influenza pandemics: a global epidemic-economic perspective. *J R Soc Interface*. 2011;8(62):1307-1313.
25. Barry T, Manning S, Lee MS, Eggleton R, Hampton S, Kaur J *et al*. Respiratory hygiene practices by the public during the 2009 influenza pandemic: an observational study. *Influenza Other Respir Viruses*. 2011;5(5):317-320.
26. Murray R, Chandler C, Clarkson Y, Wilson N, Baker M, Cunningham R. Sub-optimal hand sanitiser usage in a hospital entrance during an influenza pandemic, New Zealand, August 2009. *Euro Surveill*. 2009;14(37)pii:19331(37).
27. Ministry of Health. Responding to Public Health Threats of International Concern at New Zealand Air and Sea Ports: Guidelines for public health units, border agencies and health service providers. Wellington: Ministry of Health, 2016. <https://www.health.govt.nz/system/files/documents/publications/responding-public-health-threats-international-concern-nz-air-sea-ports-aug16.pdf>
28. Boyd M, Baker MG, Mansoor OD, Kvizhinadze G, Wilson N. Protecting an island nation from extreme pandemic threats: Proof-of-concept around border closure as an intervention. *PLoS One*. 2017;12(6):e0178732.
29. Boyd M, Mansoor O, Baker M, Wilson N. Economic evaluation of border closure for a generic severe pandemic threat using New Zealand Treasury methods. *Aust N Z J Public Health*. 2018;(8 August).
30. Nghiem N, Carter MA, Wilson N. Emergency food storage for organisations and citizens in New Zealand: results of optimisation modelling. *N Z Med J*. 2012;125(1367):49-60.

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