

1918 Spanish flu records could hold the key to solving future pandemics

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Ninety years after Australian scientists began their race to stop the spread of Spanish flu in Australia, University of Melbourne researchers are hoping records from the 1918 epidemic may hold the key to preventing future deadly pandemic outbreaks.

This month marks the 90th anniversary of the return of Australian WWI troops from Europe, sparking Australian scientists' race to try and contain a local outbreak of the pandemic, which killed 50 million people worldwide.

Researchers from the University of Melbourne's Melbourne School of Population Health, supported by a National Health and Medical Research Council grant, are analysing UK data from the three waves of the pandemic in 1918 and 1919.

They hope that modern high-speed computing and mathematical modeling techniques will help them solve some of the questions about the pandemic which have puzzled scientists for close to a century.

Professorial Fellow John Mathews and colleagues are analysing the records of 24,000 people collected from 12 locations in the UK during the Spanish flu outbreak including Cambridge University, public boarding schools and elementary schools.

He says gaining a better understanding of how and why the virus spread will help health authorities make decisions about how to tackle future pandemics.

"In the 1918/19 pandemic, mortality was greatest among previously healthy young adults, when normally you would expect that elderly people would be the most likely to die," Professor Mathews says "We don't really understand why children and older adults were at lesser risk.

"One explanation may be that children were

protected by innate immunity while older people may have been exposed to a similar virus in the decades before 1890 which gave them partial but long-lasting protection.

"Those born after 1890 were young adults in 1918. They did not have the innate immunity of children and as they weren't exposed to the pre-1890 virus they had little or no immunity against the 1918 virus. We can't prove it but it is a plausible explanation."

Another striking feature is that the pandemic appeared in three waves, in the summer and autumn of 1918 and then the following winter.

One theory being examined to explain why some people were only affected in the second or third wave is that because of recent exposure to seasonal influenza virus they had short-lived protection against the new pandemic virus.

"The attack rates in the big cities weren't as high and this is probably because many people had been exposed to ordinary flu viruses, giving short-lived immunity," he says.

"In the English boarding schools, where there was social demarcation, children were probably less exposed to seasonal influenza viruses in earlier years; without that protection, pandemic attack rates were much higher than in ordinary government elementary schools.

"If we can provide a detailed time course of epidemics and the attack rates at different times, that information can be extremely useful in determining how a future pandemic might progress," says Professor Mathews.

He says initial findings point strongly to the value of short-lived immunity to provide protection or partial protection against the early waves of a virus.

This is particularly important when considering the stockpiling of drugs and vaccines to protect the community against a virus.

"The early implications of our study are that there may be benefit in providing short-lived immunity that is broadly based rather than specific," he says.

"If another flu pandemic were to come along and you have a vaccine, it may be better to use it even if it is against a different sub-type of the virus."

Source: University of Melbourne

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