Australian flu epidemic inundates public health services

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The 2017 Australian winter flu season looks to be the most severe for at least eight years. It has caused more than 400 deaths nationally and placed significant demands on under-funded public hospital and primary care health services. The peak numbers of flu cases also occurred earlier in winter than in previous years.

The epidemic has demonstrated the incapacity of the public health system to manage a sudden increase in acutely sick patients. Emergency room visits reached record levels at the peak of the season in many major hospitals, with limited or no beds available for many more affected by the virus.

The past three years have seen higher numbers of reported cases compared to the previous three years, suggesting an emerging trend that means future flu seasons may see repeats of this year's epidemic or worse. The severity of the Australian flu season also is creating fears that the northern hemisphere winter will produce a similar crisis.

No full report on the Australian flu season is expected until the end of November, but the Australian government's Health Department recorded 212,365 laboratory-confirmed notifications of influenza by October 16. The numbers have more than doubled since last year.

By the end of September, according to the Health Department, 417 influenza-associated deaths had been notified to the National Notifiable Diseases Surveillance System during 2017. The median age of deaths notified was 85 years. There had been a large increase in deaths since the previous Australian Influenza Surveillance Report, mostly attributed to improved reporting in New South Wales.

However, the Health Department cautioned that the true number of deaths could be higher, because the statistics depend on the follow up of cases to determine the outcome of their infection. Such follow up is not a requirement of notification, making year-on-year comparisons unreliable.

Australian Medical Association vice president Dr Tony Bartone told the *New York Times*: "Clearly, we don't have the reliable sources of information to assist us with predictions regarding future years. The more information we collect, the more prepared we will be."

Media reports have highlighted numbers of deaths in aged care facilities, prompting calls for booster vaccinations for the elderly, because the effectiveness of immunisation can decrease with age, due to weakened immune systems. But the problems are far broader.

The pressure on public hospitals has been overwhelming. Attendances to emergency centres have broken prior attendance records for many hospitals. In the state of Victoria, more than 3,900 people visited emergency departments each day during August, the most ever recorded for that month.

Resources have been limited by continuous cost cutting by both state and federal governments. Many hospital staff have contracted the flu themselves, compounding staffing shortages. The epidemic was not declared a pandemic, which would have triggered increases in staffing levels.

Vaccination is vital in the fight against influenza as it permits people to build up immunities to viruses. Severe influenza can lead to secondary bacterial infections, such as pneumonia, which can complicate the illness, making it life-threatening.

This year's vaccine targeted four flu strains—two influenza A and two influenza B. It is highly effective against influenza B and one of the A strains, H1N1. However the vaccine is known to be less effective against the H3N2 strain.

Australia-wide data suggest so far that 74 percent of the 2017 cases could be attributed to the H3N2 strain, which is different to the other well-known A strain, H1N1 or

"swine flu," that caused a pandemic in 2009.

The H3N2 variant has been a dominant virus over the past five Australian flu seasons and is known to have the most impact on elderly people. There are fears this year that the vaccine will have been less than 40 percent effective against H3N2.

Vaccines are designed from the flu strains of the previous season. However, health experts are concerned that this year's vaccinations may have been undercut by new variants or mutations of the H3N2 strain.

The World Health Organisation Global Influenza Surveillance and Response System, a worldwide network of influenza centres and collaborating laboratories, found that vaccine effectiveness was reduced where the H3N2 was prevalent. This has led to recommendations to vaccine manufacturers to modify the vaccine's H3N2 component for the next season.

Flu vaccines success rates vary from year to year. The United States Centre for Disease Control and Prevention estimates that from 2004 to 2016, influenza vaccine effectiveness ranged from the 10 percent to 60 percent. It can take vaccine manufactures up to six months to produce large quantities once a strain is identified. Thus, the viruses for the next flu season have to be anticipated in advance and cannot account for subsequent virus mutations.

Health experts hope a "universal" vaccine can be developed to account for all influenza viruses and mutations. No such vaccine has been produced, however.

Vaccines are not the most lucrative sector of the pharmaceutical industry, causing companies to shut down vaccine productions. It is more profitable to sell treatments that are taken daily, compared to one-off or annual treatments such as flu vaccinations. In the United States, the Food and Drug Administration licensed vaccines made by 26 different manufacturers in 1967. By 1980 the number fell to 17 and by 2002 it dropped to 12.

Today the major pharmaceutical conglomerates dominate vaccines. The profit motive limits the companies from funding vaccine research and development, leaving much of the work to publicly-funded researchers, who find opportunities increasingly limited by major cuts in government budgets.

Despite varying protection with vaccines, extensive research has demonstrated that immunisation decreases the risk of contracting influenza. In Australia, the vaccination rate is low, covering just 20 percent of the population. Under the federal government's National Immunisation Program, only certain vulnerable individuals can obtain the influenza vaccine for free. Even then, they often must pay a health provider to administer the vaccination.

The program covers pregnant women, those 65 years and older, and people at risk of infection, such as those with respiratory or heart conditions, diabetes or compromised immune systems. This includes Aboriginal and Torres Strait Islander people 15 years and over.

For those not covered—the vast majority of the population—if an employer does not provide the vaccine, the cost can be $6 to $20 for children and adults, on top of the consultation fee to visit a doctor.

The cost of vaccination has been proven to be a barrier. The Australian Child Health Poll demonstrated that for Queensland parents, the cost was an issue limiting the vaccination of their children. The study's author, paediatrician Anthea Rhodes, told the Australian Broadcasting Corporation: "Universally free funded flu vaccines could have the potential to increase the rate among families and kids."

The severity of this flu season forced the Victorian state Labor government—after the epidemic had already peaked—to announce a one-off funding package of $115 million. The funding related to moving flu patients faster through emergency rooms so ambulances could get back on the road faster. However, the state government refused to offer free, universal vaccinations, unless the federal government funded them.

Australian governments, like their counterparts internationally, are increasingly lowering corporate taxes in order to increase profits. This is driving ongoing cost cutting in healthcare and all essential social services. This year's flu epidemic, and the possibility of worse outbreaks to come, again highlight the human cost as essential services like public health care become unable to cope with epidemics.