Two specific antiviral drugs are now available for the treatment of established influenza infection. Zanamivir (Relenza) and oseltamivir (Tamiflu) both interfere with the access of influenza A and influenza B virus into cells and the escape of virus from cells. Zanamivir is administered as a twice daily inhalation to adults and children aged five years and over. Oseltamivir is administered as a twice daily capsule to those aged 13 years and over and as a suspension formulation for children one year and older, and adult patients who cannot swallow capsules.

Dr Domenic Dwyer, medical virologist at Westmead Hospital in Sydney, said the drugs are effective for laboratory-confirmed influenza infection, reducing the severity and duration of infection.1 - 3 “Both treatments need to be commenced within 36-48 hours of the first symptoms, and they are not effective against other viruses such as RSV, adenovirus, parainfluenza and metapneumovirus which can cause similar symptoms,” Dr Dwyer said. “We need to educate the public about the need to seek early treatment, rather than just spending the first few days at home in bed.”

Most trials of zanamivir and oseltamivir have been in relatively healthy people. Effects in reducing the duration of illness are more pronounced in people with additional risk factors.

## INFLUENZA SPECIALIST GROUP

The Influenza Specialist Group consists of medical and scientific specialists as well as professional and patient groups from around the country. It cooperates with state and federal governments in educational activities about influenza. In conjunction with other organisations including the Australian Medical Association, Royal Australian College of General Practitioners, WHO Collaborating Centre for Reference and Research on Influenza, Pharmaceutical Society of Australia, National Asthma Council, Diabetes Australia and the National Heart Foundation it runs the annual Influenza Awareness Program. The Program, launched in 1992, informs key audiences about the consequences of influenza and the importance of preventing and treating influenza.

## REFERENCES


## ANTIMVIRAL TREATMENTS FOR EXISTING INFECTION

Epidemics of influenza among poultry flocks in Asia have made headline news, but the implications for human infection are still uncertain. Influenza A is fundamentally a virus of birds, with infection of humans and the establishment of distinct and self-perpetuating human strains an incidental occurrence, according to Alan Hampson. Influenza A has 16 H (haemagglutinin) types and nine N (neuraminidase) types. Only three H types (H1, H2 and H3) and three N types (N1, N2, N8) have been known to occur as self-perpetuating infections in humans.

Recent outbreaks originating in Asian countries have involved an H5N1 type, and human infections and deaths have been reported. “The concern is that the virus will adapt to the human host, either through mutation or genetic reassortment by mixing with a human strain,” Mr Hampson said. “This type of antigenic shift is the basis of influenza pandemics.” A vaccine seed virus has been produced by the UK. This is a Vietnamese strain of the H5N1. Trials testing this vaccine strain have commenced in the USA and Australia and will also trial vaccines using this same strain. A concern is that if the virus changes considerably in adapting to humans that this vaccine may no longer be immunogenic.

The ongoing spread of the Avian influenza into Mongolia and Russia continues to heighten the threat that a pandemic may result. WHO is sponsoring the effort to prepare and coordinate an international response.
are targeted at a stable virus, while the match between the vaccine and circulating strains of influenza virus is not always perfect. In addition, only about 40% of influenza-like respiratory viral infections, characterised by rapid onset, fever and malaise, are in fact caused by the influenza virus.

A number of analyses have addressed specific outcomes, and identified pronounced benefits in terms of proven influenza vaccine. Table 2 provides a representative example. In the frail elderly and those with underlying conditions, prevention of hospitalisation and death may be the main aim, while in younger healthy people the focus may be on decreasing time off work or reducing complications from pre-existing chronic diseases.

Contraindications to vaccination include hypersensitivity to the vaccine components and current febrile illness.

### AUSTRALIAN VACCINATION RATES: GOOD PROGRESS BUT ROOM FOR IMPROVEMENT

Dr Rosemary Lester, Manager of the Prevention and Perinatal Health Section at the Department of Human Services in Victoria, said there has been good progress in vaccinating older Australians against influenza but room for significant improvement in protecting younger people considered at risk.

“There is no vaccine register for influenza, but vaccination rates in Australians over 65s are fairly stable with latest research from the AIHW demonstrating uptake rates of 79% in this group,” Dr Lester said.

The NHMRC recommends vaccination in adults and children older than 6 months with chronic pulmonary or circulatory disease, including severe asthma, and other chronic illness that required regular medical follow-up or hospitalisation in the preceding year. In these at risk groups, latest research has shown that only 42% of people are getting vaccinated annually.

“Influenza vaccination is a proven lifesafer for older people and those at risk for other reasons,” Dr Lester said.

### HEALTH AUTHORITIES SUPPORT VACCINATION IN CHRONIC ILLNESS

Representatives of three leading health authorities have supported the benefits of influenza vaccination in people with an underlying chronic illness that increases their vulnerability to the infection and its complications.

Greg Johnson, Chief Executive Officer of Diabetes Australia in Victoria, noted that NHMRC guidelines recommend vaccination for adults and children older than 6 months who have chronic illnesses that require regular medical follow-up. This includes diabetes. “We believe all people with diabetes, regardless of their age, should be aware of this recommendation and discuss their individual needs with their doctors,” Dr Johnson said. “Diabetes is a rapidly growing problem, affecting Australians of all ages. Influenza can exacerbate the problems of diabetes, and it is sensible to take steps to avoid it.”

The NHMRC also recommends vaccination for people with severe asthma. Kristine Whorlow, Chief Executive of the National Asthma Council, said the effects of influenza and the risks of complications could be more problematic in the presence of underlying asthma and other chronic respiratory illnesses. “We define ‘severe’ asthma as asthma which causes persistent or frequent symptoms including night-time asthma, limits physical activity, needs emergency department visits or hospital admission, or requires treatment with high doses of inhaled corticosteroids or oral corticosteroids,” Ms Whorlow said. “There are a number of myths about influenza vaccination in people with asthma. It does not trigger asthma attacks, although it may cause a slight increase in symptoms in a minority of people. If this occurs, then it’s appropriate to increase the use of a preventer medication in line with the individual’s written asthma management plan. Most people, though, notice no difference in their asthma symptoms after influenza vaccination.”

The National Heart Foundation also encourages people with a range of cardiovascular diseases to have an annual influenza vaccination. “It’s been estimated that up to two-thirds of people hospitalised with influenza are younger than 65 and have conditions such as heart disease, lung disease or diabetes,” according to Dr Andrew Boyd, the Foundation’s Medical Affairs Manager. “Although this group suffers a significant proportion of the total burden of the disease, only about 40% of Australians aged between 40 and 65 who have such high-risk conditions are protected through immunisation.” An acute influenza infection predisposed people with heart disease not just to a higher risk of respiratory complications, but also risk exacerbating their underlying cardiovascular problem.

### IS IT INFLUENZA?

Some people call any cold or other upper respiratory tract infection ‘the flu’. It is important to realise that influenza is a specific illness caused by the influenza virus. Some of the features of influenza are listed in Table 3.

### WORKPLACE VACCINATION

Vaccinating healthy working adults against influenza will generate cost savings 95% of the time. The exact economic outcomes may vary from year to year, depending on factors such as the illness rate in each season, the absenteeism that results, and the hourly rate of pay of employees who are affected.

It has also been demonstrated that vaccination has benefits beyond protecting employees against influenza. A study in healthy employees aged between 18 and 64 found those who were vaccinated against influenza had:

- 25% fewer episodes of upper respiratory tract illness
- 43% fewer days off work because of upper respiratory illness
- 44% fewer visits to doctors because of upper respiratory illness

In one Australian company, vaccination benefits were calculated to be over two and a half times the cost of the program. This finding was also supported by international studies, with cost savings estimated at an average of $US547 for every person vaccinated in a study published in 1995.

The benefit of workplace vaccination cannot be predicted each year, as it is influenced by the extent and virulence of the epidemic. A recent review suggests employers need to make individual decisions on whether to implement a workplace influenza vaccination based on factors including:
- the ease of organising a vaccination program
- the ease of transmission in a workplace
- the potential impact of an epidemic.

“In organisations where delivery of the vaccine is relatively easy and sudden rises in absence would be catastrophic, the cost-benefit equation may favour vaccination,” the review stated. “Alternatively, where vaccine delivery is logistically difficult (for example, wide geographical spread, multiple bases) and the impact of an epidemic on productivity would be less severe, the case for vaccination is not as strong.” In health and social care settings, the risk of transmission from employees to clients, and vice versa, also needs to be taken into account.

### IMPLEMENTING A WORKPLACE INFLUENZA VACCINATION PROGRAM

Influenza vaccination programs have been implemented successfully in workplaces for many years, according to Dr Brandon Carp, managing director of the Unified Healthcare Group. Each program should be individualised, with the promotion to staff, the arrangements for funding and other issues being determined according to the circumstances,” he said. “The programs are very well received because staff and employers both benefit from protecting employees’ health, reducing the risks of transmission in the workplace, and decreasing the time lost from work.” Employers considering an influenza prevention program should access it like other investments, accounting for the potential direct savings of reduced sick leave and lost productivity, as well as the indirect advantages of offering a staff benefit.

Influenza vaccination programs now tend to be undertaken by contractors rather than in-house personnel. Consultants are able to assist with promotion of the program, education about the health consequences of influenza and information about the efficacy and safety of vaccination. “It is vital that a flu vaccination program is provided through a professional and comprehensive service using well-trained professionals, that the quality of the vaccines is preserved by following strict ‘cold chain’ measures, and that any adverse reactions can be dealt with appropriately,” Dr Carp said. Workplace vaccination is an excellent method for protecting younger people with underlying chronic diseases against influenza. “A large proportion of this age group are in the workforce but might not necessarily have the opportunity to discuss it with their GP,” Dr Carp said. “They often view themselves as healthy, and might not be aware of the special advantages of vaccination.”