Influenza and influenza vaccination

– saving lives by dispelling common myths among at-risk Australians aged 18-64 years

Research Report by the Influenza Specialist Group

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Executive summary

Over 1.2 million Australians aged under 65 have at least one chronic disease placing them at increased risk (or 'at-risk') of serious complications and death from influenza infection.[1] Influenza vaccination is the primary, single most effective measure to prevent infection and the complications associated with the disease, with evidence supporting vaccination of younger at-risk groups to reduce morbidity and mortality.

Vaccination rates among Australians 65 years and older have been consistently high in recent years as a result of education and well organised vaccination programs targeted at this age group and funded via the Federal Government's Immunise Australia Program. Under this Program, influenza vaccination is provided at no cost to Australians 65 years and older and indigenous Australians aged 50 or over.

Unfortunately the annual influenza vaccination rate of at-risk 18-64 year olds is only roughly half of that in the group aged 65 and over – 42% versus 80% respectively.[2] This means that over half of at-risk 18-64 year olds are not taking the recommended measures to help protect themselves against the consequences of influenza infection, as advocated by the National Health and Medical Research Council (NHMRC).[3]

In order to understand why influenza vaccination uptake is so low in this age and risk group, the Influenza Specialist Group (ISG) commissioned research examining the attitudes and beliefs of at-risk 18-64 year olds about the disease and its prevention by vaccination.

The findings of this research illustrate that common myths and misconceptions about influenza and the vaccine prevent the majority of people in this group from seeking vaccination; for example, 67% believe that being fit and healthy affords protection against contracting influenza, and 31% believe the vaccine can give you influenza. (For detailed discussion of findings, see Part 2.)

In light of these findings, the ISG recommends adopting the following strategies to increase rates of vaccination among at-risk 18-64 year olds:

1. Increase public education to dispel myths and propagate factual information about influenza and vaccination
2. Make vaccination more readily available to at-risk individuals in this age group
3. Facilitate the identification of at-risk individuals in primary care settings and the implementation of actions to achieve improved vaccination rates among at-risk groups

About the Influenza Specialist Group

The Influenza Specialist Group (ISG) 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 infection. The ISG receives funding from industry and, through its Board of Directors, maintains full control over all of its activities and published materials.

For more information on the Influenza Specialist Group or influenza, please visit:
www.influenzaspecialistgroup.org.au

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1. Influenza statistics and costs associated with at-risk 18-64 year olds

1.1 Influenza symptoms and severity[4]

Influenza, known as 'flu', is a highly contagious, potentially life-threatening disease. The incubation period is usually two to three days, but in some cases can be up to one week. Infection, usually confined to the upper respiratory tract, initially manifests as a headache and sore throat. Myalgia (muscle pain) and fever begin shortly after and are usually more pronounced with influenza than with other viral respiratory infections. An accompanying cough is common, as are otitis media (ear infection) and sinusitis (sinus infection), especially in children. Lethargy may persist for weeks, causing even young people without chronic illness to be incapacitated for several days and not return to full health for two to three weeks.

While influenza is usually self-limiting, the infection can extend to the lower respiratory tract, possibly leading to pneumonia or other serious complications (Table 1).

Common symptoms	Accompanying symptoms	Examples of serious complications
Cough	Rigors and chills	Pneumonia
Fever	Myalgia	Cardiac infections
Fatigue	Sore throat	Death

Table 1: Common symptoms and complications of influenza

1.2 Who is at-risk?

An estimated 1,205,000 Australians aged under 65 have at least one chronic disease placing them at increased risk (or 'at-risk') of serious complications and death from influenza.[1] The likelihood of having an underlying medical condition increases with age, with as many as 30% of 40-64 year olds classified as being at-risk.[1]

In addition to all people aged 65 years or over, other at-risk persons for whom annual vaccination is recommended include:[3]

- Children (6 months and older) and adults with chronic conditions such as:
    - diabetes mellitus (types 1 and 2)
    - respiratory illnesses (severe asthma, bronchitis, cystic fibrosis, chronic obstructive pulmonary disease (COPD), emphysema etc)
    - cardiac disease
    - renal failure
    - impaired immunity (including drug induced impairment and HIV infection)
    - neurological disorders that compromise respiratory function (such as multiple sclerosis and spinal cord injury) and
    - metabolic disease
- Aboriginal and Torres Strait Islanders aged 15 years and older

1.3 The stakes are higher for at-risk individuals

Compared with other individuals under 65, the risk of developing serious complications is relatively high in people with chronic conditions. Influenza can significantly exacerbate the morbidity associated with a number of chronic illnesses,[5,6] with much of the morbidity and mortality due to influenza caused by exacerbation of underlying cardiac, respiratory and endocrine disorders.[4]

This is played out in Australian hospitalisation data, where in addition to the elderly and very young, the most severely-affected patient groups also include those with underlying chronic illnesses.[7] Influenza-related fatalities among at-risk 18-64 year olds are approximately 40 times that of people without chronic illness, and they are 800 times higher among those with combined chronic cardiovascular and pulmonary disease.[1]

A commonly observed, serious complication of influenza is pneumonia, due either to the primary influenza infection or, more often, a secondary bacterial infection. However other very serious complications are known to occur including cardiac and neurological complications, muscle wastage, and Reye's syndrome.[4] These complications can result in increased numbers of strokes,[8] cardiac failure,[9] and deaths among diabetics, especially in those with co-morbidities such as cardiac and renal disease.[10]

1.4 Influenza prevention

Influenza vaccination is the single most effective measure to prevent infection and the serious complications associated with the disease, being approximately 70-90% effective at protecting against infection in healthy individuals less than 65 years of age.[3] Annual influenza vaccination has been shown to reduce and prevent many complications associated with chronic illness (Table 2).

Chronic condition	Published benefit of influenza vaccination
Chronic Obstructive Pulmonary Disease (COPD) (includes emphysema and chronic bronchitis)	Reduced acute respiratory illness[10]
Asthma	Significantly reduced rates of asthma exacerbation [3,11]
Other lung disease	Marked reduction in hospitalisation and death among vaccinated sufferers of cystic fibrosis[12]
Coronary artery disease	Reduces risk of myocardial infarction, sudden death[9]
Coronary syndromes	Reduces deaths at one year follow up[13]
Kidney disease	Reduced morbidity and mortality in end stage renal disease[14]
Diabetes	79% reduction in hospitalisations during epidemic periods[15]

Table 2: Benefits of influenza immunisation for specific populations aged 18-64 years

Because of the solid foundation of international evidence supporting its use, many developed nations, including the USA, UK and Australia, recommend vaccination for at-risk patients. In Australia, partial funding for influenza vaccination of at-risk patients is provided under the Pharmaceutical Benefits Scheme (PBS). However, the process is more streamlined for those aged 65 and over, allowing them to receive the vaccine without cost in only a single visit to their doctor.

1.5 Vaccination rates and barriers among at-risk groups

While the benefits of influenza vaccination for at-risk 18-64 year olds are well-established in clinical literature and the medical community at large, the general public's understanding of the associated risks still lags behind. The most recently published Commonwealth Government immunisation survey estimated that 42% of at-risk 18-64 year olds were vaccinated against influenza – far short of a reasonable 80% target. This indicates a clear need for increased education and guidance on the part of GPs in their contact with at-risk patients.

For at-risk 18-64 year olds, perception plays a significant role in the decision to seek vaccination. Lack of awareness that chronic illness predisposes them to increased complications from influenza remains a key deterrent.[16] Studies have found that other barriers include the following misconceptions:

- An infection as 'simple' as influenza cannot cause serious complications or death[17,18]
- People do not need to get vaccinated if they are fit and healthy
- Vaccination isn't effective at preventing infection
- Vaccination causes influenza[19]

(See Appendix I for a list of other common myths about influenza and vaccination)

1.6 Financial impact of influenza infection in at-risk adults

Approximately 2,500 people in Australia die of influenza each year; however, this figure may be a significant underestimate, as studies have shown that complications caused by influenza (such as pneumonia) are often listed as the primary cause of death, not influenza itself.[20] Laboratory confirmation of influenza's role in these cases is often difficult to establish or never sought at all.

Because of this, a recent health economic report was commissioned to analyse the burden of influenza in Australia. The report found that influenza accounts for over 300,000 GP contacts and 18,000 hospitalisations per year.[21] A separate study focusing on at-risk Australians aged 18-64 estimated that 80,387 GP visits annually could be attributed to this group alone,[1] while The National Institute of Clinical Studies (NICS) estimates 75% of those hospitalised for influenza in Australia every year (where influenza is listed as a cause) are under the age of 65.[22] Influenza also accounts for approximately 10% of all workplace absenteeism due to sickness.[1]

It is no surprise, then, that the average annual (direct and indirect) cost associated with influenza in the 18-64 year old at-risk Australian population alone is approximately $130.43 million.[1] In order to alleviate this burden, an enhanced understanding of current barriers to vaccination in the at-risk 18-64 age group is required.

2. Research

2.1 Introduction

In March 2008, the ISG commissioned Galaxy Research, an Australian market research company, to conduct an online survey of 18-64 year old Australians at-risk of complications arising from influenza infection. Regular assessment of this population's attitudes to influenza vaccination is important in order to measure attitude shift and the impact of educational activities on vaccination rates. In addition, by identifying their reasons for or against vaccination, barriers and enablers to vaccination can be identified and appropriately addressed.

2.2 Aim

To quantify the beliefs of 'at-risk' 18-64 year old Australians regarding the risks and benefits associated with annual influenza vaccination, as well as to examine how these beliefs may have an impact on the uptake of vaccination in the target population.

2.3 Method

People on a permission-based online panel were invited to participate in the study. Invitations were emailed out to potential participants across Australia. Invitees were eligible to participate in the survey if they were aged 18-64 years and suffered from one or more chronic conditions, including (as specified in the NHMRC Immunisation Handbook 2008):

- Chronic asthma
- Lung disease other than asthma
- Diabetes (type I and type II)
- Kidney disease
- Impaired immunity

The online survey captured the responses of 416 participants based on a pool of approximately 250,000 people within Australia with relevant chronic conditions who were enrolled.

2.3.1 Questionnaire

The online survey consisted of 25 questions in three sections: a screening section to rule out ineligible respondents, the main body of the survey which measured beliefs about influenza and vaccination, and a final section of basic demographic questions. (The full body of the survey and a detailed breakdown of the sample size can be found in Appendices II and III).

2.4 Results and discussion

The results of the survey clearly indicated that myths and misconceptions regarding influenza and vaccination are a key barrier to at-risk 18-64 year olds seeking vaccination against influenza. Key findings from the research are summarised below (full results are included in Appendix IV).

2.4.1 Influenza vaccine uptake among at-risk 18-64 year olds is unacceptably low

The research found that 55% of at-risk Australians aged 18-64 do not get vaccinated annually and only 45% do. This finding is in line with previously-cited Australian Institute of Health and Welfare (AIHW) research, which found that 42% of people in this group do undertake vaccination annually.[2] It was also found that over a quarter of the respondents (28%) were never vaccinated against influenza.

Interestingly, the research revealed that respondents with children were more likely to be vaccinated than those without children (52% as opposed to 41%).

2.4.2 Reasons for not seeking vaccination

Among the top reasons cited by respondents for not seeking vaccination were:

- Fear of needles (28%); in fact, 48% of all respondents said they would prefer to receive the vaccine orally, if this option was available
- Time and inconvenience (25%)
- Do not think about it (22%)
- Believe influenza isn't serious enough to warrant immunisation (20%)

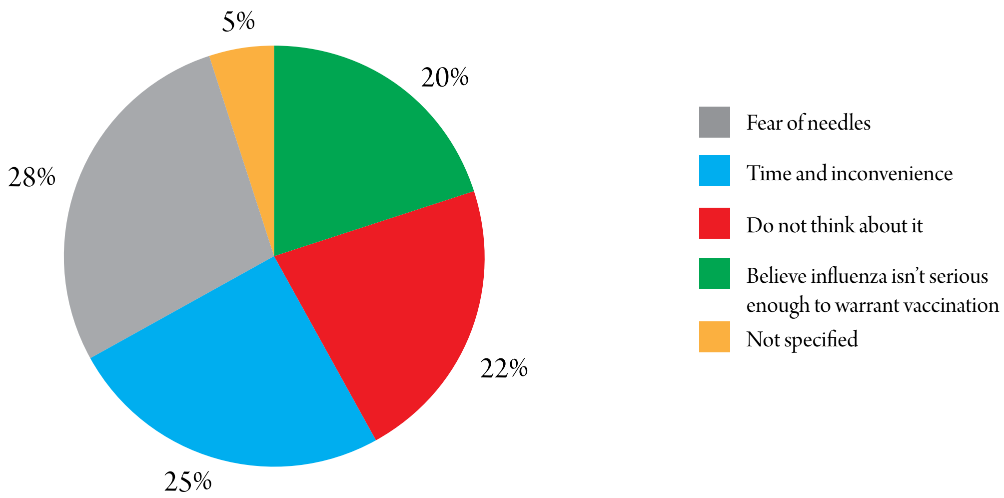

Figure 1: Respondents' reasons for not seeking annual vaccination

In fact, a significant proportion of respondents perceived influenza to be less severe than it really is:

- A third (36%) of respondents were unaware that those with an underlying medical condition have an increased risk of dying from influenza-related complications
- Almost half (45%) said they believe there is no more than a four-fold increase in the risk of death, when it is in fact 40-800 times greater, depending on the underlying condition(s)
- A similar proportion (47%) vastly underestimated the number of influenza hospitalisations per year, believing them to be around 5,000 (as opposed to the actual figure of around 18,000)

Some reasons for avoidance were also influenced by gender. A higher percentage of male respondents (27%) believed influenza wasn't serious enough to warrant vaccination (as compared to the general figure of 20% of all respondents), while 43% of females said they would be less likely to seek vaccination if they were pregnant (despite national immunisation guidelines recommending vaccination to pregnant women, especially for those who will be in the later stages of their pregnancy during the influenza season).[3]

2.4.3 Myths and misconceptions

The findings indicated that a surprisingly high number of respondents believe some common misconceptions about influenza and vaccination, which could be a key barrier preventing more people in this group from seeking vaccination.

For example (Figure 2):

- The majority (67%) believed that being fit and healthy affords some protection against contracting influenza, while in reality it has little bearing on one's immunity to the disease
- While 78% of respondents were aware that the vaccine causes only mild side effects, 31% actually believed that the vaccine can itself cause influenza (which is impossible)
- Despite NHMRC advice that influenza vaccines are 70-90% effective in protecting against influenza infection, less than a third of respondents (32%) believed that it was more than 70% effective

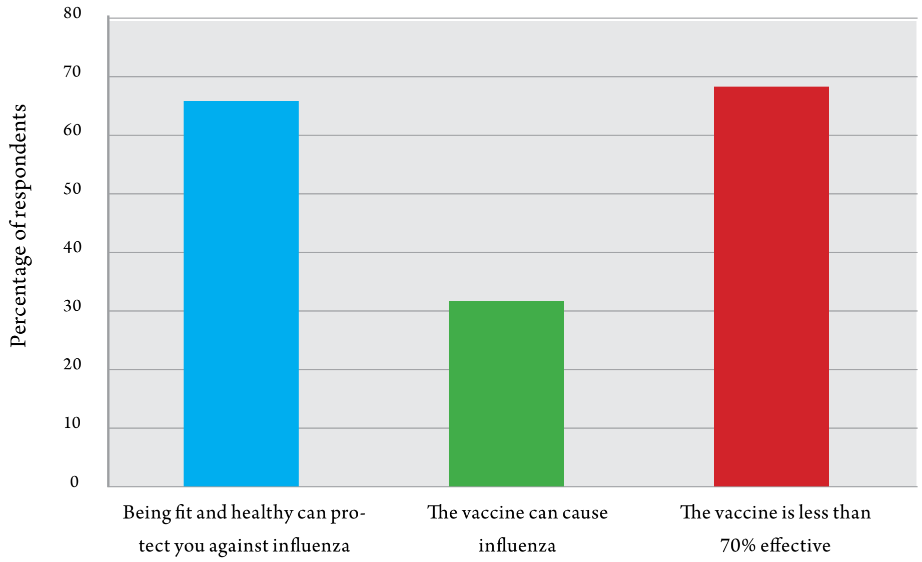

Figure 2: Percentage of respondents subscribing to popular influenza/vaccine misconceptions

3. Implications and recommendations

To achieve ongoing reductions in morbidity and mortality from influenza among Australian adults, action is required at all levels of Australian society including government, healthcare professionals, consumer groups and the broader community. In response to the latest research findings, the ISG proposes three key strategies to increase influenza vaccination uptake rates in the at-risk 18-64 year old population:

1. **Increased education of both consumers and healthcare professionals about influenza and vaccination, including:**
    a. The increased risks of death and morbidity associated with influenza infection in people of all ages with chronic conditions
    b. The lack of protection that being fit and healthy provides against contracting influenza
    c. The efficacy of the influenza vaccine in preventing infection
    d. Risks caused by influenza and the importance of vaccination during pregnancy
    e. Personal hygiene measures, such as sneeze and cough etiquette, to limit transmission during the influenza season

2. **Increased convenience for 18-64 year old at-risk Australians seeking vaccination, e.g. making the vaccine directly available through GP surgeries**

3. **Facilitation of identification and education of at-risk individuals in primary care**

The ISG recommends the following activities to implement these strategies:

1. Education

General public

In order to dispel myths surrounding influenza and vaccination, the ISG believes it is crucial to properly educate the general public (i.e. consumers) on the risks and realities of the disease. This educational program should include messages about the serious nature of influenza, as well as the acceptable means of prevention and treatment.

Once properly informed, people should be encouraged to educate their families, colleagues and acquaintances about the risks of influenza and the benefits of timely vaccination. This educational initiative could be achieved most effectively through a broad-based media outreach a few months before and throughout the influenza season.

Healthcare providers

While the medical community has a clear working knowledge of influenza, this information is not always communicated to patients in a clinical setting. Clinicians should be reminded of the need to identify at-risk individuals, and to raise with this population the benefits of vaccination in advance of the influenza season.

It should be emphasised to healthcare professionals that their role is crucial in protecting the under-65 at-risk community against influenza and its potential complications. It should also be demonstrated that increased vaccination uptake is beneficial to all healthcare professionals, as it could reasonably be expected to reduce the chance of a patient overload once the influenza season is in full swing.

2. Improved access to influenza vaccination

A number of workable ways to improve patient access to influenza vaccination can be envisaged through minor changes to ongoing activities. GPs could consider extending their opening hours for a few weeks during autumn to provide extra opportunities for those patients to seek vaccination who would otherwise not be able to find the time.

Medical facilities should also be encouraged to take advantage of their nursing resources in administering vaccinations and scheduling specific vaccination clinics including evening clinics. The possible introduction of express or mobile vaccination clinics should be considered in order to achieve total community saturation.

To further address the barrier of time and convenience, the ISG believes that an expansion of the Immunise Australia Program to also encompass at-risk Australians under 65 years of age would significantly contribute to vaccine uptake in this group. Doing so would not only assist in increasing vaccine uptake rates, but would send a message to people in this population that complications from influenza can be just as serious for them as they can be for those aged 65 or over, and hence that vaccination is just as important.

3. Facilitation to identify at-risk individuals in primary care settings

In order to support healthcare professionals, who are a key and frequent contact for at-risk patients, there are a range of tools that could be more widely used to facilitate identification and follow-up of at-risk individuals in primary care settings:

- Greater use of medical registers and software that have the capabilities to record patient-specific information to aid GPs in the identification and follow-up of patients with underlying medical conditions, for whom annual influenza vaccination is recommended. Work has already begun in this area, with the National Diabetes Register (NDR) collecting information about new cases of insulin-treated diabetes mellitus (where patient consent has been granted), thus assisting in national diabetes monitoring and providing information to health service providers. Flagging the records of at-risk patients could enable busy healthcare professionals to proactively raise influenza vaccination with at-risk patients during the pre-influenza season. In addition, annual reminder messages could be sent out to patients with chronic medical conditions flagged by the medical software or register, encouraging autumn health checks during which influenza immunisation could be discussed.

- A whole-of-life immunisation register – The Australian Childhood Immunisation Register (ACIR) currently monitors childhood vaccination coverage rates and reports on the immunisation status of all Australian children aged up to seven years. The ACIR enables easy identification of the vaccination status of young children, and ensures that they are fully protected against preventable childhood diseases, irrespective of potential relocations within Australia. It is therefore encouraging that the Commonwealth Government has provided funding to explore options for the redevelopment of the ACIR into a whole-of-life register, including adult immunisation for a range of vaccine-preventable diseases such as pneumococcal disease, tetanus and influenza. The ISG supports this initiative, and once the scoping study has been concluded, advocates rapid implementation according to the study findings.

- Encouraging pharmacy to discuss influenza vaccination with at-risk patients – Patients with underlying medical conditions regularly purchase medication through their pharmacy. Thus while at-risk patients might see their GP every three to six months, it is likely that they see their pharmacist on a monthly basis. This puts pharmacists in a unique position, where they are able to see at-risk patients regularly in the lead-up to the influenza season and can hence discuss the merits of influenza vaccination with them. Like other healthcare professionals, pharmacists and their staff are very busy, and consideration should therefore be give to tools that could facilitate discussion of influenza vaccination with relevant customers. Potential actions include support for flagging of certain medications on pharmacist software and provision of promotional materials, such as reminder cards with a vaccination message to place with repeat prescriptions.

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Appendices

Appendix I: Influenza mythbuster

Myth: Influenza is not a serious disease

Fact: Influenza (commonly known as flu) is a highly contagious and potentially life-threatening disease. Influenza is not the same as the common cold and even young and healthy people may take two weeks or more to fully recover from the illness.

Influenza causes an estimated 2,500 deaths,[1] 18,000 hospitalisations and 300,000 GP consultations[2] annually in Australia. Perhaps surprisingly, the number of deaths from influenza each year is similar to the number of Australian road traffic fatalities.[3]

Myth: Influenza vaccination can cause influenza

Fact: The influenza vaccine does not contain any live viruses and therefore cannot cause the illness.[4]

Myth: The influenza vaccine is not effective

Fact: In healthy persons under 65 years of age the vaccine is 70% - 90% effective.[4]

Furthermore, studies in older adults have convincingly shown that vaccination greatly reduces the number of cases of pneumonia, hospitalisation due to respiratory illness as well as total deaths occurring during an influenza season.[5]

Myth: The influenza vaccine causes serious adverse events

Fact: Serious adverse reactions to the influenza vaccine are rare, with most common reactions being local redness and swelling at the injection site. Other mild symptoms including headache, mild fever and sore muscles may occur in a very small percentage of people vaccinated but are limited to 24-48 hours duration.[4] Allergic reactions may occur in people with a severe egg allergy and such people should not receive the influenza vaccine.

Myth: People do not need to get vaccinated if they are healthy

Fact: Anyone can contract influenza and being fit and healthy does not protect against infection. For some people the result of an influenza infection will be lost income through days off work, but for those at high risk of developing complications from influenza, the results can be much more serious, including hospitalisation or even death.

Myth: It is not necessary to get vaccinated against influenza every year

Fact: Influenza viruses have a great capacity to mutate and change. In light of this, a new vaccine is made each year to protect against the current strains. In addition, immunity provided by the current influenza vaccines begins to fade after a year, so it is important to get vaccinated against influenza every year, regardless of vaccine strain changes.

Myth: Vaccination against influenza is a waste of time and money

Fact: Even healthy young people may take two weeks or more to fully recover from influenza and people falling ill commonly need to take time off work, which may result in financial hardship. Furthermore, falling ill with influenza might mean missing out on important life events, as people often cannot get out of bed for several days.

Influenza vaccination is the best way to help protect against influenza infection and the vaccine can be easily and quickly administered by a GP or other vaccination provider.

Myth: People shouldn't get vaccinated against influenza if they are sick

Fact: Minor illnesses without fever should not prevent vaccination, especially if the person is in one of the groups at-risk of serious complications.

Myth: Pregnant women should not get vaccinated against influenza

Fact: Suffering from an infection, such as influenza, during a pregnancy is known to be associated with an increased health-risk to both mother and unborn child. It is therefore desirable that women avoid suffering infections during pregnancies. Women who are intending to become pregnant or who are pregnant should proactively discuss vaccination with their doctor.[6]

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Appendix II: Survey questionnaire

SECTION A – ALL RESPONDENTS

A1. Where do you live in Australia?

NSW - Sydney		Queensland - Brisbane	
NSW – Other		Queensland – Other	
ACT		South Australia - Adelaide	
Victoria - Melbourne		South Australia – Other	
Victoria – Other		Western Australia - Perth	
Tasmania		Western Australia – Other	
		Northern Territory	

A2. How old are you?

17 years or under		45-49 years	
18-24 years		50-54 years	
25-29 years		55-59 years	
30-34 years		60-64 years	
35-39 years		65-69 years	
40-44 years		70+ years	

ASK IF AGED 18-64 YEARS

A3. And are you male or female?

Male		Female	

A4. Which of these conditions, if any, do you suffer from?

Please select all that apply

Heart disease	
Chronic asthma	
Lung disease other than asthma	
Any Kidney disease	
Diabetes type 1 or 2	
Impaired immunity including drug induced immune impairment; HIV	
None/ Don't know	

SECTION B – ASK ALL QUALIFYING RESPONDENTS.

B1. We are going to ask you a few questions about influenza, commonly known as the 'flu'. Firstly, how often, if at all, do you get vaccinated for flu?

Please select one option only

Every year	
Every second year	
Every 3-4 years	
Less often	
Never	

ASK IF NOT VACCINATED FOR FLU EVERY YEAR.

B2. For which of these reasons wouldn't you get vaccinated every year?

Please select all that apply	
I was vaccinated the year before	
The cost is too high	
The inconvenience and the time to get it done	
Flu vaccination is not very effective	
Don't believe in vaccinations generally	
Don't think about it, its not important	
I don't like needles	
Don't think flu is serious enough to warrant vaccination	
I can contract the flu from the vaccination	
I believe I am already immune against flu	
None/ Don't know	

ASK ALL RESPONDENTS

B3. Did you get vaccinated for flu last year?

Yes	
No	

B4. Do you believe that the flu vaccine can give you the flu?

Please select one option only

Yes	
Only if you are elderly or have an underlying medical condition	
No	
Don't know	

B5. Which of these groups of people, if any, should get vaccinated?

Please select all that apply

Everyone	
People older than 65 years and those with an underlying medical condition	
Only people older than 65 years	
Only people with an underlying medical condition	
Anyone who wants to protect themselves against the flu	
None of the above	
Don't know	

B6. Which one of these statements best describes possible side-effects of the flu vaccine?

Please select one option only

Serious side-effects are common	
Serious side-effects are limited to those with medical conditions	
Mild side-effects are common	
Reactions are typically limited to local soreness and swelling	
None of the above	

B7. How much protection from flu is provided by being fit and healthy?

Please select one option only

Being fit and healthy provides strong protection against catching flu	
If you are fit and healthy you have a reduced chance of catching the flu	
Being fit and healthy only provides very limited protection against the flu	
Being fit and healthy provides no protection at all against catching flu	
None of the above	

B8. Typically, how long do you expect a bout of flu to last before you feel completely well again?

Please select one option only

On average a day at most	
2-3 days	
4-8 days	
9-13 days	
2 weeks or more	
Don't know	

B9. To the best of your knowledge, how serious is flu?

Please select one option only

It's a serious illness which kills many people each year	
It's relatively harmless except among the elderly and those with an underlying medical condition	
It's relatively harmless except among the elderly	
It's relatively harmless except among those with medical conditions	
It's more an inconvenience than a life threatening illness	
It's just like a bad cold	

B10. What is the increased risk of death from flu among people with an underlying medical condition. e.g. asthma or diabetes

Please select one option only

No difference from healthy people	
1-2 times	
3-4 times	
5-9 times	
10-19 times	
20 or more times	
Don't know	

B11. To the best of your knowledge, about how many people are hospitalised with influenza each year in Australia?

Please select one option only

Less than 1000	
1,000-2.999	
3,000-4,999	
5,000-9,999	
10,000-19,999	
20,000 or more	
Don't know	

B12. For how many winter/ flu seasons do you think that the vaccine offers protection?

Please select one option only

Not at all	
Less than 1 season	
1 season	
2-4 seasons	
5-7 seasons	
8 or greater than 8 seasons	
Don't know	

B13. How effective do you think that the flu vaccine is in protecting you against the flu?

Please select one option only

Less than 10%	
10-29%	
30-49%	
50-69%	
70-89%	
90% or more	

B14. To the best of your knowledge, how long can the flu virus exist on hard surfaces such as stainless steel or plastic?

Please select one option only

Less than a minute	
1-3 minutes	
4-14 minutes	
15-59 minutes	
About 1 hour	
2-4 hours	
5-7 hours	
8 hours or more	
Don't know	

B15. If the flu vaccine could be taken orally by mouth instead of by needle, would you be more or less likely to get vaccinated?

Please select one option only

I would only get vaccinated if I could take orally	
I would prefer to take the vaccine orally	
It makes no difference to me	
I would prefer a needle	
I would only get vaccinated if by needle	
Don't know	

ASK IF MALE

B16. If your partner were pregnant, to the best of your knowledge, would she be more or less likely to get a flu vaccination?

Please select one option only

More likely	
It would make no difference	
Less Likely	
Don't know	

ASK IF FEMALE

B17. If you were pregnant, would you be more or less likely to get a flu vaccination?

Please select one option only

More likely	
It would make no difference	
Less Likely	
Don't know	

SECTION C – ASKED OF ALL RESPONDENTS

C1. Are you a parent of a child aged 0-17 years living at home with you?

Yes	
No	

C2 Which of these best describes your current marital status?

Never married	
Defacto or living together	
Married	
Separated, Divorced or Widowed	

C3. Which of the following describes the highest level of schooling you have completed?

Please select one option only

Below Year 12	
Attended a TAFEor technical institute	
Attended university	
University degree	
Don't know/ Refused	

C4. And finally, which one of the following categories best describes your total household income before tax?

Under $40,000	
$40,000 - $70,000	
More than $70,000	
Prefer not to say	

Those are all of the questions. Thank you for your time and participation.

Appendix III: Demographics of respondents

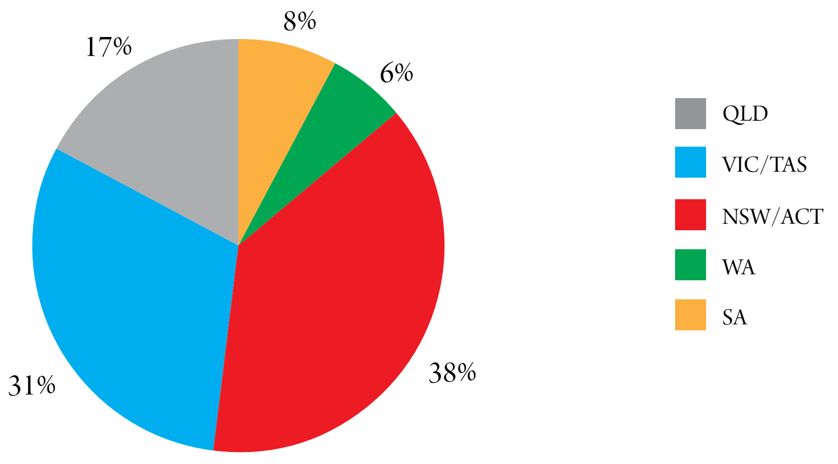

Figure 1: Distribution of participants by state

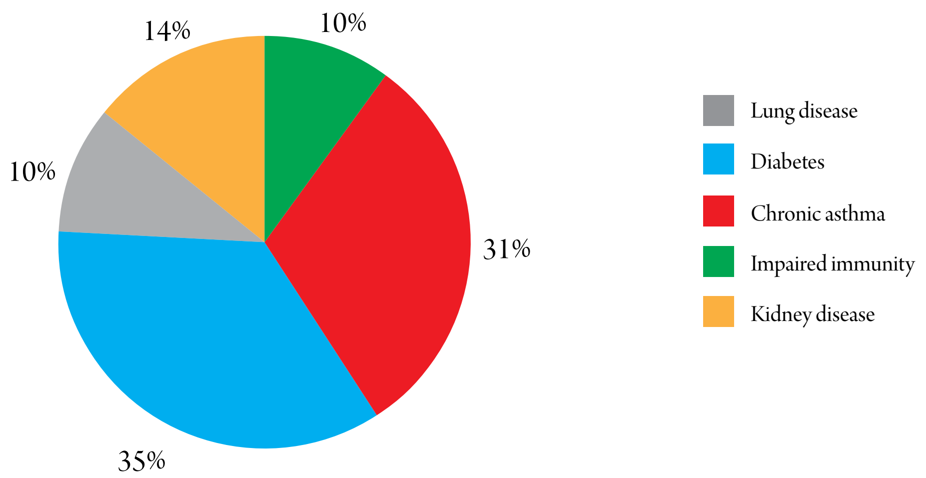

Figure 2: Distribution of participants by chronic condition

Appendix IV: Summary of survey results

Beliefs among surveyed 18-64 year old Australian sufferers of chronic conditions at-risk of influenza complications are summarised below. Relevant questions (question numbers listed after each heading) can be viewed in Appendix II.

Vaccination rates (question B1)

- 28% never get an influenza vaccination
- 45% get vaccinated every year

Reasons why vaccination is avoided (questions B2)

Those who do not get vaccinated cited the following reasons for not undertaking vaccination:

- Don't like needles (28%)
- Find it inconvenient / time consuming (25%)
- Don't think about it (22%)
- Don't think influenza is serious enough to warrant vaccination (20%)

Side effects of influenza vaccinations (questions B4 and B6)

- 31% believe influenza vaccinations can cause influenza

Who should be vaccinated? (question B5)

- 1% say that no one should get vaccinated
- 33% say that everyone should get vaccinated
- 49% say 'anyone who wants to protect themselves against influenza' should get vaccinated

Protection provided by being fit and healthy (question B7)

- 67% believe that being fit and healthy affords some protection against influenza
  - 19% of whom believe that it affords 'strong' protection against influenza

Length of illness (question B8)

Overall, people believe that a bout of influenza lasts eight days

Severity of influenza (question B9)

- 44% say that influenza is a serious illness
- 37% say that influenza could be serious among those with an underlying medical condition

Risks associated with influenza (questions B10 and B11)

- 36% don't know if there is an increased risk of death among those with a medical condition
- 45% say that there is no more than four times the average risk
- 37% don't know how many people are hospitalised each year in Australia with influenza
- 47% think that less than 5,000 people are hospitalised each year with influenza

Efficacy and the need for annual vaccination (question B12 and B13)

- 32% of people believe that the influenza vaccine is more than 70% effective at protecting them against influenza
- 62% believe that the influenza vaccine lasts one season

Influenza transmission (question B14)

- On average, respondents believed that the influenza virus survives up to 4 hours on hard surfaces (41%)
- 17% believe that the influenza virus survives for 8 hours or more
- 40% profess to not knowing how long the virus can survive

Fear of needles (question B15)

- 48% say that they would prefer to take the influenza vaccine orally
- Only 6% say that they would only get vaccinated if they could take it orally

Pregnancy and influenza vaccination (questions B16 and B17)

Among females:

- 43% would be less likely to get vaccinated against influenza if they were pregnant
- 18% don't know
- 23% say 'it would make no difference'
- Only 16% are more likely to get vaccinated

Among males, similar views were held:

- 28% don't know
- 27% say that their partner would be less likely to get vaccinated if pregnant
- Only 21% say that their partner is more likely to get vaccinated against influenza if pregnant

Education effect on vaccination rates (results of question C3 applied to results of question B1-B2)

Among those surveyed with chronic conditions, and at-risk of influenza complications, the proportion of educated people who get vaccinated every year against influenza is significantly lower than among those less educated. This lower vaccination rate does not appear to be related to lack of perceived effectiveness of the vaccine, but to the inconvenience and the time associated with vaccination.

Those who get influenza vaccination every year, by highest education level:

- 57% are educated to <year 12 level
- 49% have achieved TAFE or Technical Institute qualifications
- 39% attended university or have a university degree

Of those who do not get vaccinated every year and who said the reason was "the inconvenience and the time to get it done":

- 17% were educated to <year 12 level
- 18% have achieved TAFE or Technical Institute qualifications
- 31% attended university or have a university degree