



*Optimizing*

# VACCINATION RATES

IN CANADIANS WITH LUNG DISEASE

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Established in 2018, the Vaccination Working Group is a national coalition of healthcare organizations interested in working collaboratively to raise awareness about the importance of vaccination and to increase rates of immunization among adults affected by respiratory conditions. Co-chaired by Asthma Canada and Immunize Canada, this working group of like-minded organizations with a common purpose includes representatives from the Canadian Network for Respiratory Care, Pulmonary Hypertension Association of Canada, COPD Canada, Canadian Public Health Association, Canadian Thoracic Society, Canadian Lung Association, and the Canadian Society of Allergy and Clinical Immunology.

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# VACCINATION IS A PUBLIC HEALTH PRIORITY.

Even before the COVID-19 pandemic, vaccinating adults to combat influenza and pneumococcal disease was a public health priority—especially for chronic respiratory patients at high risk for complications and hospitalization.

This white paper examines pre-pandemic vaccination for these patients and explores the importance of education to help meet the 80% national immunization goal laid out by the Public Health Agency of Canada (PHAC, 2020).

In 2018, a group of health care professionals and patient organizations met to discuss the issue of low vaccination rates among Canadians living with chronic lung disease and formed a steering committee to collectively address this problem.



The steering committee included representatives from Asthma Canada, COPD Canada, Canadian Society of Allergy and Clinical Immunology, Canadian Thoracic Society, Immunize Canada, Canadian Lung Association, and Pulmonary Hypertension Association of Canada. To inform the strategy, the steering committee conducted a comprehensive literature review. Participating organizations also distributed surveys to the public and to health care professionals through social media channels. The results were then used as the basis for the education strategy, the first communications campaign conducted in 2020, and the development of this white paper.

A significant vaccination gap exists between those 65 years of age and older, and those 18-64 years of age. While neither group has achieved the 80% national influenza coverage goal, for those 65 years of age and older, increased uptake rates at 70% clearly indicate that efforts to increase immunization have had a positive impact.

Among adults 18-64 years of age with a chronic medical condition, survey results indicate vaccination uptake is suboptimal at 44%—the main reason for non-vaccination being non-specific and that vaccines are not necessary (Public Health Agency of Canada, 2020).

Research shows that contact with a health care professional or receiving a recommendation from a doctor is one of the most impactful factors influencing vaccination rates. It also showed a strong correlation between lifestyle or health status and vaccination. As self-perceived health status declines, vaccine uptake increases.

Better understanding of vaccination safety and efficacy enables open conversations between health care providers and patients around individualized vaccination treatment plans, adherence to treatment, awareness of policy change around access to vaccines, and improved quality of life.

Congruent with prior research literature, our survey showed that health care professionals recommended vaccinations to their high-risk patients 80% of the time. They also said that educational resources would be helpful in improving patient communication. The public survey showed that the biggest barrier to vaccination was access to a doctor. Almost 82% of the people surveyed said they were vaccinated because their family doctor recommended it. Concerns about safety and efficacy (28%) and lack of knowledge (17%) also contributed to vaccination hesitancy.

This white paper is based on a survey that was conducted prior to the COVID-19 pandemic. Given the events surrounding the pandemic, the attitudes towards vaccinations and levels of vaccine hesitancy or confidence may have changed. This white paper does not consider attitudes towards COVID-19 vaccines or changes in attitude towards vaccination in general because of the COVID-19 pandemic.

The following recommendations detail how to minimize barriers and increase vaccination uptake.

# RECOMMENDATIONS

## For Health Care Professionals

**Pneumococcal vaccination and yearly influenza vaccines should be recommended to all adults 65 years of age and older and for all those with chronic respiratory illnesses by incorporating patient education at clinical visits.**

Patient education includes:

- Increasing knowledge about recommended vaccines
- Increasing knowledge of vaccine safety and efficacy
- Addressing hesitancy and explaining the potential complications of not vaccinating, as well as side effects of vaccination.

**Non-immunizing health care providers should make a referral back to a family physician, strongly recommend vaccine(s) and provide education to reduce hesitancy.**

**Health care providers should utilize communication strategies, including new technologies and reminders when educating and during outreach to patients.**

- (e.g., electronic medical records, reminders at pharmacies)

## For Patient Advocacy Groups

**Education campaigns should:**

- **Include a clear recommendation to high-risk/chronic lung condition populations to receive necessary and recommended vaccinations.**
- **Address concerns and misinformation about vaccines and resulting hesitancy, including:**
  - benefits of vaccines particularly for those with chronic respiratory illnesses
  - side effects, and risks associated with not vaccinating, such as disease complications.

**Advocacy campaigns should address the public cost barrier:**

- the need for access to currently recommended vaccines
- removal of economic barriers for those with chronic lung conditions.

## For Individuals

**Discuss your individual vaccination needs on a yearly basis, based on your age and underlying conditions,** at your health care appointments.

**Be aware of your vaccination status and recommended vaccines.** Schedule vaccinations when necessary. Maintain accurate records of vaccinations.

# INTRODUCTION

*This white paper is based on surveys that were conducted prior to the COVID-19 pandemic. We recognize that considering the events of COVID-19, the attitudes towards vaccinations, and levels of vaccine hesitancy or confidence may have changed. This white paper does not take into consideration attitudes towards COVID-19 vaccines or changes in attitude towards vaccinations in general because of the COVID-19 pandemic.*

Since their discovery, vaccines have been proven to be one of the most successful and cost-effective public health interventions (World Health Organization, 2006). In Canada, influenza and pneumococcal vaccination in adults is a public health priority, especially for the more than 3.8 million people living with asthma and the 2 million with COPD who may be at high risk for complications and hospitalization (Public Health Agency of Canada, 2018). These chronic illnesses have a tremendous impact on our healthcare system and patient quality of life. The Canadian Institute for Health Information released data from 2016-2017 ranking COPD as the first and viral/unspecified pneumonia as the third most expensive health conditions in Canada, with annual hospital costs of \$753.3 M and \$505.8 M respectively (Canadian Institute for Health Information, 2019).

The National Advisory Committee on Immunization (NACI) recommends that people over the age of 65 or those with chronic medical conditions should receive the annual seasonal influenza vaccine to avoid the risk of influenza-related complications (National Advisory Committee on Immunization, 2020). Although Canada's national immunization coverage goal of 80% for both groups set in 2017 remains unmet, uptake has increased to 70% in those aged 65 and older in 2019-2020, up from 63% in 2015-2016 (Public Health Agency of Canada, 2020). The coverage goal of 80% has been established based on the importance of protecting Canadians at high risk for infection, disease-related complications, or hospitalization.

Two hundred and twenty-one health care providers and 777 people with chronic respiratory conditions responded to a survey that was developed by members of the Vaccination Working Group and distributed to both patients and health care professionals. Barriers to vaccination were identified by both groups; they included lack of patient education and costs by the health care providers and lack of understanding around the need for vaccinations, their efficacy, and potential allergies to vaccine ingredients by the public.

It is imperative to address these barriers and identify opportunities for improved education and awareness, and policy change to ensure access. This report outlines the evidence regarding factors influencing vaccination rates and measures that can be taken to increase vaccination uptake. It also includes insights from people living with chronic respiratory illnesses and their health care providers. It identifies existing barriers, gaps, and challenges and provides health care professionals, patient advocacy groups and individuals with recommendations to improve vaccination uptake in adults affected by respiratory conditions, with the aim of reducing the physical, social, and financial impact.

# WHAT THE EVIDENCE SHOWS

Every year, there is an average of 12,000 hospitalizations and 3,500 deaths in Canada due to influenza infections (Schanzer DL, 2013) (Schanzer DL S. C., 2013). Among high-risk groups, vaccination coverage for adults over the age of 65 (70%) and those 18-64 years (44%) remains below the national coverage goals of 80% (Public Health Agency of Canada, 2020).

This suboptimal vaccination coverage greatly impacts our healthcare system and highlights the need for effective strategies to increase vaccine uptake in those considered high risk. Before the development of such strategies, it is imperative that we better understand the factors influencing the current rate of vaccination.

## Access to Health Care Professionals

Contact with a health care professional in the last 12 months or receiving a recommendation from a doctor is one of the most impactful factors influencing vaccination rates. The factor most strongly associated with influenza vaccination among adults aged 60 years and older, as well as among younger adults with at least one chronic condition, was a recommendation from their doctor (Baron G, 2018). There is enormous value in engaging with a health care professional and patient advocacy groups to provide education and make recommendations that would positively impact vaccination rates.

## Self-perceived Health

There is also a strong correlation between self-perceived health status and vaccination. Vaccine uptake is found to increase as self-perceived health declines. Individuals with a chronic medical condition have a higher likelihood of receiving the vaccine because they perceive their health to be poorer, with a greater risk of complications if they contract the flu (Chen Y, 2007). Those with chronic conditions have greater contact with the healthcare system and providers, creating more opportunity to receive a recommendation for vaccination, an important determinant of influenza vaccine uptake (Polisena J, 2012).

## Vaccine Hesitancy

Commonly reported barriers to uptake are:

- adult beliefs and attitudes
- lack of knowledge or understanding
- low perceived risk of disease
- skepticism around safety and efficacy
- weak or absent recommendations by health care providers
- limited public funding.



# WHAT THE EVIDENCE SHOWS

Assessing these barriers yearly is important for measuring progress towards Canada's national vaccination coverage goal (80%) and to inform decision-making and develop future influenza and other vaccination programs.

Influenza may not seem like a significant viral infection, particularly in people without an underlying health condition. Most people's beliefs and perceptions of influenza severity are often based on their overall health, the condition of their immune system and previous experience with influenza (Nowak, 2015). Many do not believe they are likely or susceptible to contract influenza or to have a severe health outcome. Many believe that deaths or cases of severe illness associated with influenza primarily occur among older people or people with weak immune systems (Nowak, 2015). This may explain why vaccine uptake remains suboptimal (44%) among adults 18–64 years with chronic medical conditions, well below national coverage goals.

Despite a higher influenza vaccination rate among seniors over the age of 65 (70%), the coverage goal currently remains unmet.

Public questioning of the necessity and/or effectiveness of vaccines exists. Despite strong endorsement by public health authorities, there is persistent hesitancy (Ward L. & Draper, 2008). Canadian adults demonstrate heightened concern and uncertainty about adverse events following vaccination, particularly long-term vaccine side effects. Public doubt about their safety, effectiveness, and necessity will hinder the success of current and future vaccination programs (Perna, 2016). Among those aged 18–64 years with a chronic medical condition, 'not getting around to getting the vaccine' was the most frequent response for not receiving the influenza vaccine (26%), whereas among seniors, concerns about vaccine safety was one of the common reasons (13%) (Public Health Agency of Canada, 2020).

Vaccine hesitancy is often attributed to a lack of information or 'knowledge deficit' among those who reject vaccination (MacDonald, 2012) (Marshall, 2013) (Yaqub, 2014). Patients are increasingly turning to the internet and social media platforms to receive health information. Online health information can increase a person's knowledge about their condition and connect people with others sharing the same experience. Patients are no longer influenced solely by their doctor's health advice and recommendations. Four in ten respondents aged 18–64 with a chronic medical condition (38%) or without (42%) would seek information on the internet through a Google search and health websites or blogs, whereas seniors over 65 would consult a health professional such as doctor, nurse, or pharmacist (Public Health Agency of Canada, 2020).

Online health information offers alternative options, insights, and a broader knowledge base for patients. Health care providers have entered a new world of medicine. They must take a proactive role and be responsible for information delivery and dialogue with their patients (Tonsaker, 2014). The association between the source of information that people consult and vaccine uptake is strongly associated with health care professionals' recommendations.

# EXPLORING VACCINATION IN THE LUNG COMMUNITY

A survey was jointly conducted by Asthma Canada, Immunize Canada, Canadian Network for Respiratory Care, Pulmonary Hypertension Association of Canada, COPD Canada, Canadian Public Health Association, Canadian Thoracic Society, Canadian Lung Association and Canadian Society of Allergy and Clinical Immunology. The survey was open to Canadian residents over 18 years of age living with a lung condition. The survey aimed to understand the behaviours and attitudes towards immunization among adults with chronic lung conditions in Canada and identify barriers to vaccination. A survey was also distributed to health care professionals to learn more about their practices and needs in regard to adult immunization coverage against influenza and pneumococcal disease, among those living with chronic respiratory illness.

The survey was circulated through email, organizational newsletters and social media platforms, including Facebook and Twitter.

## Survey Findings: Health Care Professionals

There were 221 responses from health care professionals: the majority were from Ontario (39%) and Alberta (21%). Figure 1 outlines how respondents identified.

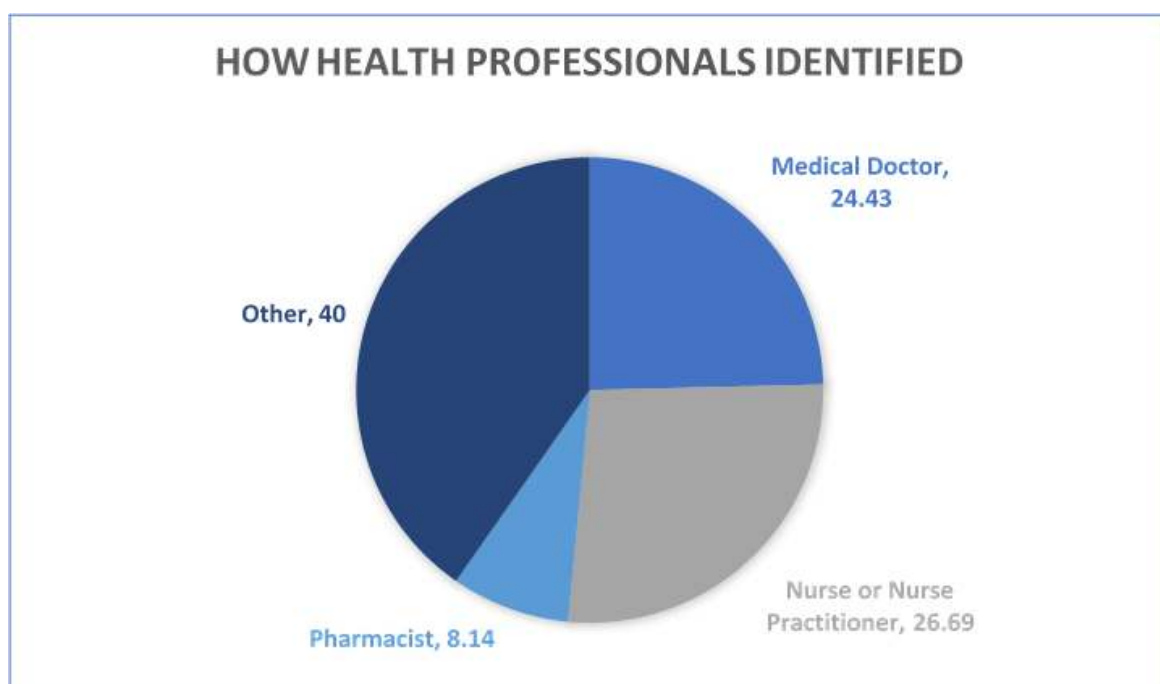


Fig. 1

Those choosing the “other” category identified as respiratory therapists. When doctors were asked to identify their area of practice, 57% identified Respiriology and 31% Family Medicine. Table 1 identifies their work setting.

**Work Settings**

Hospital-based Clinic	33%
Family Health Team Practice	16%
Community Clinic	15%
Private Practice	10%
Pharmacy	6%
Other	20%

*Table 1*

The majority of those choosing the “other” category identified acute care or home care as their work setting.

Health care professionals were asked about what immunization activities they include in their preventive health visits and to check all that apply. Answers included:

- check patient health status
- screen patient immunization status
- schedule a return visit
- refer patients to a general practitioner
- administer recommended vaccines at initial visit
- “other” category.

Health care professionals said they recommend the influenza immunization to their adult patients with respiratory conditions:

- always: 80%
- very often or sometimes: 16%
- rarely or never: 4%

They reported that they recommend the pneumococcal immunization:

- always: 56%
- very often or sometimes: 39%
- rarely or never: 5%

When asked if their practice administers influenza and pneumococcal vaccines, 51% responded yes, 48% responded no. It is important to note that the explanation given for choosing 'no' was that vaccine administration was outside their scope of practice. Non-publicly funded vaccines are recommended:

- always: 12%
- very often and sometimes: 70%
- rarely or never: 18%

The graph in Figure 2 demonstrates how the respondents rate their knowledge of national and provincial/territorial immunization recommendations for influenza and pneumococcal disease.

### Knowledge of Immunization Recommendations

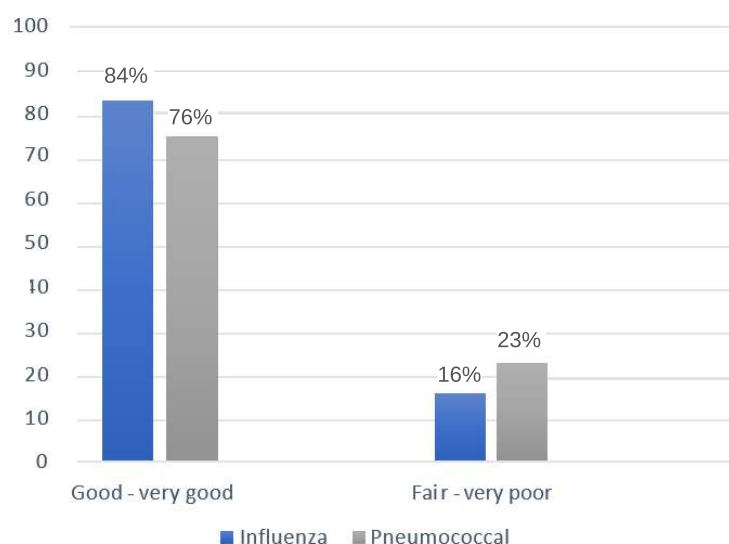


Fig. 2

Fifty-nine percent of health care professionals reported having barriers to achieving optimal immunization coverage for influenza and pneumococcal disease. The top three barriers identified were:

1. The patient underestimated the risk of vaccine-preventable disease (79%).
2. Cost associated with recommended but non-funded vaccine (69%).
3. Patients were not aware of recommended vaccinations (65%).

Sixty-two per cent of health care providers identified posters and pamphlets as aids in improving communication with patients about immunization. Seventy-eight per cent of professionals found that the most important topics to discuss with their patients included both who is at risk and vaccine safety/efficacy for influenza and pneumococcal disease. Health education using informational videos has a significant impact on acceptance, willingness to pay, knowledge and attitude in older people (Worasathit, 2015). This may lead to increased sustainability of the immunization program in older people.

## Survey Findings: Public

There were 777 responses from people living with chronic lung conditions, including (56%) 18-64 years of age and (44%) age 65 years or older. Those living with asthma (42%) made up the majority of respondents, followed by COPD (25%) and pulmonary hypertension (20%), and (13%) chose "other". Seventy-two percent of respondents were female. The top 3 locations of residence were Ontario (47%), British Columbia (21%) and Alberta (13%).

When asked if they get a yearly flu shot, 84% responded yes, while 9% responded they never get the flu shot. Sixty-six per cent of people said they received the pneumococcal vaccine, 27% said they do not, and 7% did not know.

Family health/community health office (41%) was identified as the location of choice when going to get vaccinated, followed by pharmacy (42%). (Note that pneumococcal vaccination is not available in pharmacies.)

Most respondents (64%) selected "none of the above" when asked about barriers that prevented them from getting vaccinated. When asked to specify, there were a range of responses:

- being immunocompromised
- concern about interactions with other medications
- past reactions to vaccinations.

Twenty per cent identified access as a barrier: cost, not having a doctor, clinic availability, wait times and inability to visit physical clinic locations. Almost 10% said they are not sure about the effectiveness of the vaccine, while 7% did not want it or think they needed it.

Table 2 outlines how respondents feel about certain statements.

## Indicate how you feel about the following statements

	STRONGLY AGREE	AGREE	NOT SURE	DISAGREE	STRONGLY DISAGREE	TOTAL
I believe that it is important for me to get all recommended vaccinations	74.54% 524	16.64% 117	5.41% 38	2.42% 17	1.00% 7	703
I believe it's important for me to get all recommended vaccinations especially since I have a lung disease	74.57% 525	15.77% 111	6.11% 43	2.56% 18	0.99% 7	704
I worry about the side effects of vaccinations	9.30% 65	18.31% 128	14.74% 103	37.48% 262	20.17% 141	699
Advertising on vaccination programs encourages me to receive vaccinations	24.39% 169	32.03% 222	18.04% 125	19.48% 135	6.06% 42	693
My family doctor tells me I should receive vaccinations	53.51% 374	28.33% 198	7.44% 52	8.01% 56	2.72% 19	699
My specialist tells me I should receive vaccinations	51.49% 345	21.94% 147	15.97% 107	7.46% 50	3.13% 21	670
My nurse, Respiratory Therapist or Respiratory Educator tells me I should receive vaccinations	44.53% 293	21.12% 139	21.73% 143	8.66% 57	3.95% 26	658
My family doctor or specialist has NEVER recommended vaccinations	5.02% 34	5.91% 40	6.06% 41	20.24% 137	62.78% 425	677
I feel well informed about vaccinations	42.75% 298	39.89% 278	10.33% 72	5.60% 39	1.43% 10	697
I'm not sure where to get vaccinations	1.49% 10	3.42% 23	3.42% 23	20.54% 138	71.13% 478	672

Table 2

# DISCUSSION

In Canada there is a lack of knowledge about the rate of vaccination in patients with respiratory illnesses. The few studies that include specific uptake rates vary widely, and there is a need for further research that examines vaccine uptake by respiratory illness. However, it is clear in the few studies that do address vaccine uptake that individuals with respiratory illnesses are not being vaccinated at the optimal rate.

Contact with a health care provider or receiving a recommendation from a doctor is one of the most impactful factors influencing vaccination rates. Research from six Canadian studies shows that the more contact a patient has with their health care provider, the more likely they are to be vaccinated. This was a consistent factor in each study, regardless of the type of vaccine or respiratory disease (Boerner F, 2013) (Farmanara N, 2018) (Guthrie JL, 2017) (Lechelt L, 2013) (Yi, 2014) (Roy M, 2018).

As recommendation from a health care provider has emerged as the single most important factor influencing rates of vaccination, education and new vaccination guidelines should be targeted to providers to make them aware of this finding. However, as many patients visit with other professionals whose scope of practice does not include vaccination, efforts should be made to communicate the need and importance of vaccination and make a referral back to the family doctor.

Similar efforts can target pharmacists, who can provide the influenza vaccine and reduce barriers to access mentioned in the survey, including clinic availability, access to doctor or wait times, and physical clinic location.

Groups at high risk and vaccine safety/efficacy were identified by health care professionals as important topics to discuss with patients. This is consistent with the findings (Public Health Agency of Canada, 2020) that among seniors, concerns about vaccine safety was one of the common reasons for not receiving the influenza vaccine.

Those 18-64 years of age with a chronic medical condition commonly state “not getting around to going to get the vaccine” as the reason for not getting vaccinated (Public Health Agency of Canada, 2020). When asked what prevented them from getting vaccinated, answers included: “I am healthy, and/or never get the flu,” “I have allergies,” “Vaccines aren’t necessary,” “Laziness or too busy to get around to it,” “I get sick when I get vaccinated.”

These findings demonstrate a need for more education around the need for vaccination, the risks of not vaccinating, and the safety and efficacy of vaccination. Health care professionals stated that posters and pamphlets are materials that will help them educate their patients. Along with informing the patient, these materials can also strengthen communication and complement the health care provider recommendation.

Our survey results indicated that vaccination uptake rates among our collective stakeholders' engaged patient groups are much higher than in the reviewed literature. This finding underscores the significant role that patient advocacy groups play: acting as a liaison between beneficiaries, clinical professionals, policymakers and the public. They are a valuable asset to the healthcare system and have a unique opportunity to promote wellness through education, raising awareness of the importance of vaccination, and supporting patients.

## LIMITATIONS

Note that survey participants represent a highly engaged sample of individuals who are connected to or have communication with one or more of the organizations that disseminated the survey.

In the health care provider survey, health care professionals were asked about what immunizations activities they include in their preventive health visits and asked to check all answers that apply. While 37% of respondents selected 'screen patient immunization status', it is important to note that 20% chose 'other' because they wanted to select more than one answer, but the survey did not allow the option to select multiple answers.

In the public survey, it is important to note that respondents could indicate more than one location of choice when choosing where they preferred to get vaccinated. Twenty-six per cent of respondents chose 'other' and specified 'family doctor', so the option 'family health office' may have been misinterpreted or misunderstood.

The survey findings should be considered within this context.



# RECOMMENDATIONS

These recommendations are strategies that can be implemented to increase vaccination uptake.

## For Health Care Professionals

Pneumococcal vaccination and yearly influenza vaccines should be recommended to all adults 65 years of age and older and for those of all ages with chronic respiratory illnesses by incorporating patient education at clinical visits.

Patient education includes:

- Increasing knowledge of recommended vaccines
- Increasing knowledge of vaccine safety and efficacy
- Addressing hesitancy and explaining the potential complications of not vaccinating; as well as side effects of vaccination.

Non-immunizing health care providers should make a referral back to a family physician, strongly recommend vaccine(s) and provide education to reduce hesitancy.

Health care providers should utilize communication strategies, including new technologies and reminders when educating and during outreach to patients.

- (e.g., electronic medical records, reminders at pharmacies).

## For Patient Advocacy Groups

Education campaigns should:

- Include a clear recommendation to high-risk/chronic lung condition populations to receive necessary and recommended vaccinations.
- Address concerns and misinformation about vaccines and resulting hesitancy, including:
  - benefits of vaccines, particularly for those with chronic respiratory illnesses
  - side effects and risks associated with not vaccinating, such as disease complications.

Advocacy campaigns should address the public cost barrier:

- the need for access to currently recommended vaccines
- removal of economic barriers for those with chronic lung conditions.

## For Individuals

Discuss your individual vaccination needs on a yearly basis, based on your age and underlying conditions, at your health care appointments.

Be aware of your vaccination status and recommended vaccines. Schedule vaccinations when necessary. Maintain accurate records of vaccinations.

# FUTURE RECOMMENDATIONS

Future research should focus on targeting high-risk populations to understand the factors that influence the decision to vaccinate.

Given that health care provider recommendation emerged as the *single most important factor* influencing rates of vaccinations in Canadian studies, future work and efforts should be focused on both patient and physician education for maximum impact.

As new diseases and vaccines emerge, many similar barriers may become apparent for patients with chronic lung disease. There will need to be guidance around the delivery and administration of vaccination and outreach strategies for high-risk groups.

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