Mastering Influenza Vaccination: Enhancing Clinician Knowledge and Communication for Influenza Vaccine Advocacy

Background

Influenza remains a highly contagious respiratory illness with a significant impact on global morbidity and mortality, particularly among high-risk populations such as the elderly, young children, pregnant women, and individuals with chronic health conditions. While influenza A viruses [subtypes, A(H1N1) and A(H3N2)] can target a broad spectrum of host species, influenza B (9B-Yamagata and B-Victoria) primarily affects humans.[1]

Influenza viruses possess two antigens, hemagglutinin, and neuraminidase, which can combine in multiple permutations, leading to antigenic shifts (recombination of the segmented viral genome) and drifts (mutations), ultimately resulting in new strains.[2] These variations are responsible for the need for annual updates to influenza vaccines to ensure their effectiveness against circulating strains.

During the 2022-2023 season, the United States saw approximately 31 million cases of symptomatic illnesses, 14 million medical visits, 360,000 hospitalizations, and 21,000 deaths attributable to influenza (Table 1).[3] Preliminary data for the 2023-24 season indicates a rise in cases, hospitalizations, and deaths, pointing to a worsening trend in the influenza burden.[4] Additionally, in the US, people aged ≥50 and children <5 years are more likely to be hospitalized secondary to influenza. Moreover, mortality rates are highest for people older than 65 years. Among children, infants under 6 months experience the highest rates of hospitalization and in-hospital mortality. This highlights the importance of vaccination against influenza, especially in these high-risk populations.

As we continue to improve our understanding of influenza and develop new tools for its prevention and treatment, vaccination remains the cornerstone of influenza prevention, reducing influenza's impact on the community, including viral transmission and morbidity, particularly for high-risk patients.

The CDC and the Advisory Committee on Immunization Practices (ACIP) recommend routine annual influenza vaccination for all individuals aged 6 months and older who do not have contraindications. In the US, three types of influenza vaccines are available: Inactivated Influenza Vaccine (IIV), Recombinant Influenza Vaccine (RIV), and Live-Attenuated Influenza Vaccine (LAIV).[5] Given that the B/Yamagata virus has not been detected in global surveillance after March 2020, the Food and Drug Administration (FDA) and WHO have recommended that trivalent formulations of vaccines be used for the 2024-2025 influenza season.[6]

For egg-based influenza vaccines, the following formulations are recommended:

- an A/Victoria/4897/2022 (H1N1)pdm09-like virus,
- an A/Thailand/8/2022 (H3N2)-like virus, and
- a B/Austria/1359417/2021 (B/Victoria lineage)-like virus.

For cell- or recombinant-based influenza vaccines the following are recommended:

- an A/Wisconsin/67/2022 (H1N1)pdm09-like virus,
- an A/Massachusetts/18/2022 (H3N2)-like virus, and
- a B/Austria/1359417/2021 (B/Victoria lineage)-like virus.

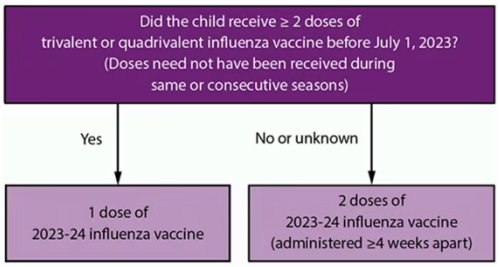
There are several types of influenza vaccines tailored to different age groups and health needs. Standard-dose inactivated influenza vaccines, both egg-based and cell-based, are approved for individuals aged 6 months and older. High-dose inactivated influenza vaccines, containing four times the antigen of

standard doses, are recommended for adults aged 65 and older. Recombinant influenza vaccines, egg-free and with triple the antigen of standard doses, are approved for adults aged 18 and older and are one of three vaccines preferred for adults aged 65 and older. Adjuvanted inactivated influenza vaccines, designed to boost immune response with an added adjuvant, are also recommended for those aged 65 and older. Lastly, the live attenuated influenza vaccine (nasal spray), containing weakened live viruses, is approved for individuals aged 2 to 49 but is not recommended for pregnant people or those with certain medical conditions. Although a severe allergic reaction to eggs, such as anaphylaxis, is listed as a contraindication for the use of egg-based inactivated influenza vaccines (IIV4s) and live attenuated influenza vaccines (LAIV4), the ACIP provides an exception for those with egg allergies.[5]

To enhance vaccine uptake and decrease respiratory illnesses, current guidance for the COVID-19 vaccine and RSV vaccine is that they can be administered with the influenza vaccine, with no required minimum interval between doses.[5]

Timing of vaccination

For most people, only one dose of influenza vaccine is recommended for the season, and it should ideally be offered during September or October. Vaccination is generally not recommended during July and August for most groups unless there is a concern that later vaccination may not be possible; for children of any age who require only one dose, and for pregnant persons who are in the third trimester during these months, vaccination can be considered.



Children 6 months to 8 years who require 2 doses should receive their first dose as soon as possible. Table 2 shows the recommended ages and doses of the different influenza vaccines.[7,8]

Finally, it is essential to raise clinician confidence in communicating vaccine importance and increasing public awareness of the safety, efficacy, and benefits of vaccination and access to healthcare. This will enable HCPs to provide education to patients as well as the public about influenza prevention and treatment, dissipate myths, and address vaccine hesitancy, ultimately improving vaccination rates and decreasing the overall public health impact of the disease. This will ultimately decrease the burden of influenza-related morbidity and mortality.

This program aims to address the critical gaps in knowledge about vaccine timing, safety, and efficacy and increase Healthcare providers' (HCPs') competence in communicating the importance of influenza vaccination, especially in patients who are hesitant. By equipping HCPs with updated evidence-based education on vaccination dosing, timing, safety, and efficacy and boosting their confidence in counseling patients regarding the benefits and importance of influenza vaccination, the program will enhance HCPs' ability to increase vaccine uptake, optimize patient outcomes, and reduce the burden of influenza-related morbidity and mortality.

Clinician Knowledge and Practice Gaps	Learning Objectives	Expected Outcomes
HCPs lack the latest evidence-based knowledge on influenza vaccination,	Apply the latest evidence-based guidelines on influenza	Participants will demonstrate increase in knowledge of influenza

including optimal timing, co-administration with COVID-19 and RSV vaccines, and the safety and efficacy of combined immunizations, to prevent and control the spread of seasonal influenza in outpatient and community settings.	vaccination, to mitigate the transmission of influenza and improve patient health outcomes.	vaccination including optimal timing, administration schedule, and co-administration with COVID and RSV vaccines, to reduce the burden and impact of influenza using current vaccination strategies.
HCPs lack the communication skills and confidence to effectively discuss influenza vaccine benefits, address concerns, counter misconceptions, and promote informed decision-making, especially when engaging with vaccine-hesitant and diverse patients with varying health literacy.	Demonstrate effective communication skills that address vaccine concerns, dispel myths and promote vaccine acceptance and foster informed vaccine decision-making.	Participants will possess an enhanced ability to engage in conversations with patients regarding specific vaccine related concerns, dispel misinformation and encourage thoughtful vaccine choices, especially when working with vaccine hesitant individuals and culturally diverse groups.

Gap 1: HCPs lack the latest evidence-based knowledge on influenza vaccination, including optimal timing, co-administration with COVID-19 and RSV vaccines, and the safety and efficacy of combined immunizations to prevent and control the spread of seasonal influenza in outpatient and community settings.

Learning Objective: Apply the latest evidence-based guidelines on influenza vaccination, to mitigate the transmission of influenza and enhance patient health outcomes.

During the 2017-2018 influenza season, marked by an extended period of high influenza activity and increased outpatient visits and hospitalizations, the influenza vaccine played a critical role in diminishing the virus's impact, preventing millions of illnesses, hospitalizations, and deaths despite moderate vaccine effectiveness.[7]

However, as illustrated in Table 1, the burden of influenza remains substantial, with recent seasons indicating a worsening trend.

Table 1: Estimated Influenza Disease Burden[3,4]

Time Period	Symptomatic Illness	Medical Visits	Hospitalizations	Deaths
2022 - 2023	26 – 51 million	12 – 24 million	290,000 – 670,000	18,000 – 97,000
October 2023-April 2024	34 – 62 million	15 – 29 million	380,000 – 7 80,000	24,000 – 68,000

This data suggests that despite vaccination being the most effective strategy for reducing the incidence, severity, and overall burden of influenza-related diseases across the population, significant knowledge gaps persist among HCPs-such as misconceptions about vaccine safety and efficacy–impacting vaccination rates and public health outcomes.[9,10]

A study evaluating provider knowledge of trivalent inactivated and high-dose influenza vaccines revealed that only 63.2% of participants answered correctly on a knowledge survey.[9] Another study revealed that HCPs often overestimated the side effects of the influenza vaccine and missed opportunities to promote vaccination, indicating a need for better education on vaccine safety and the importance of annual vaccination.[11] The findings highlighted significant gaps in understanding, particularly regarding contraindications, common adverse effects, and the availability of high-dose vaccines. Educational programs addressing these gaps are essential, as research demonstrates that educational interventions improve HCPs' knowledge, enhance influenza prevention behaviors, boost vaccination rates, and decrease the incidence of respiratory tract infections.[12]

Additionally, each influenza season potentially introduces new vaccine formulations and updated public health strategies, requiring healthcare providers to continually adjust their knowledge and practices. This constant evolution can make it difficult for HCPs to provide the most current and effective advice to their patients, underscoring the importance of ongoing education and resources to stay informed. It is imperative that HCPs stay abreast of the latest influenza strains and vaccine recommendations, including updates on vaccine composition, indications, dosage, administration guidelines, and contraindications. This ensures accurate, guideline- and evidence-based vaccination practices for their patients.

Furthermore, many studies have shown low influenza vaccination rates among healthcare workers. In one study, only 40.4% of healthcare workers in hospitals and 45.3% in nursing homes received influenza vaccine.[13] In a 2021-22 survey, about 20% of healthcare personnel did not receive influenza vaccinations despite ACIP and CDC recommendations that all healthcare personnel receive annual influenza vaccinations. In this survey, about 8 % of healthcare personnel with a master's or doctoral degree, 7.6% of nurse practitioners and physician assistants, and 12.2% of nurses and other clinical personnel did not receive influenza vaccination.[14] Factors limiting influenza vaccination uptake in healthcare workers include concerns about vaccine efficacy, fear of side effects, lack of time, perceived low risk of contracting influenza, mistrust of vaccines, inadequate access to vaccination programs, insufficient awareness of vaccination benefits, absence of workplace mandates, and cultural or personal beliefs against vaccination.[15] The reluctance of healthcare personnel to get vaccinated highlights the continued misconceptions about the vaccine's efficacy, safety, and ability to prevent complications in those who have influenza. This underscores the urgent need for targeted education to address misconceptions about the efficacy, safety, benefits, and importance of vaccination. By providing accurate information and increasing awareness, this educational effort can help dispel HCPs' fears, promote timely vaccination, and ultimately enhance vaccination rates among healthcare personnel and patients to improve public health outcomes.

Influenza vaccination is well-documented to reduce the risk of influenza by 40-60%,[16] decrease the severity of illness and adverse outcomes, including ICU admission rates, decreased risk of cardiovascular events,[17] mortality, and hospitalization due to exacerbations of chronic conditions such as diabetes and COPD, other chronic lung conditions.[18–22] Current season vaccination reduced influenza odds by 42% in previously unvaccinated patients and by 15% in those vaccinated the prior season, with varying effectiveness against specific strains.[23] While repeated vaccinations may slightly lower effectiveness compared to single-season vaccination, a meta-analysis confirmed that receiving vaccines in consecutive seasons provides significantly better protection against all influenza strains than skipping vaccination altogether.[24] Despite its benefits, gaps in vaccine uptake persist due to clinician and patient-level factors, including knowledge gaps regarding vaccine efficacy, limitations in patient education, and barriers to discussing vaccine effectiveness across specific patient demographics.

With the ever-evolving influenza virus, it is necessary that HCPs understand the nuances of the influenza vaccine formulation, dosage, and effectiveness and stay abreast of the latest recommendations and research findings. With this knowledge, HCPs can make informed decisions about vaccine administration, ensuring optimal protection for the patient against the current circulating influenza strains while contributing to public health efforts to control influenza outbreaks.

Gap # 2: Healthcare providers lack the communication skills and confidence to effectively discuss influenza vaccine benefits, address concerns, counter misconceptions, and promote informed decision-making– particularly when engaging with vaccine-hesitant patients and diverse cultural populations across various health literacy levels.

LO #2: Demonstrate effective communication strategies that address vaccine concerns, dispel myths and promote vaccine acceptance and informed decisions.

In 2019, WHO reported vaccine hesitancy and the global influenza pandemic among the top ten threats to global health.[25] Despite the vaccine being the cornerstone of influenza prevention and the CDC's annual update on the vaccine, its effectiveness relies heavily on public uptake. Increasing public vaccine hesitancy stems from misconceptions about vaccine safety and efficacy, resistance to mandates, mistrust in healthcare systems, fear of side effects, lack of education and awareness of vaccine benefits, and even religious objections.[26] Additionally, even trustworthy information sources could be misunderstood or misinterpreted by individuals lacking the necessary expertise.[27] This highlights the acute need for strategies to mitigate vaccine hesitancy and address concerns about vaccinations.

HCPs are uniquely positioned to educate and counsel patients about vaccines and are often trusted sources of vaccine information. As a result, HCPs hold the power to effect positive change.[28] Effective communication builds trust, enabling HCPs to address patient concerns, dispel misinformation, and provide evidence-based guidance about vaccine benefits and risks. This requires HCPs not only to be knowledgeable regarding the vaccine dosing, delivery, and adverse effects but also underscores the need for HCPs to be adequately trained and prepared for their communication role and the challenges that may arise, such as speaking to a vaccine-resistant patient. They need to be able to answer patients' questions and concerns confidently and accurately and be able to explain the importance and need for vaccination while debunking any misconceptions or misinformation patients may possess regarding the vaccine or its side effects in a non-judgmental manner that shows empathy and maintains the patient-provider relationship.

Further, numerous studies have shown a strong correlation between vaccination rates among high-risk groups and the information these patients receive from their healthcare providers.[29,30] Among 490 patients with rheumatic disease, those who were advised by their general practitioner to get an influenza vaccination were significantly more likely to follow through with it—57% vaccinated compared to just 15% of those who did not receive a recommendation (adjusted odds ratio [AOR] 6.6). The likelihood of getting vaccinated increased further if the recommendation came from their rheumatologist, with 62% of those advised being vaccinated versus 19% of those not advised (AOR 9.0). Despite these findings, only 53.6% of patients reported receiving vaccination information from any HCP. This highlights the vital influence that HCPs can exert on their patient's decision to get vaccinated and that educating HCPs about these aspects is crucial to improving their confidence in recommending vaccinations, thereby increasing coverage and reducing the incidence of influenza-related complications across diverse patient populations.[29]

A recent patient survey highlighted notable gaps in influenza vaccine recommendations across specialties, potentially driven by a lack of effective communication skills among healthcare providers. While 72% of cardiovascular patients reported receiving a recommendation for influenza vaccine from their cardiologist, only 32% of lung condition patients heard similar advice from their pulmonologist, and just 10% of diabetes patients were advised by their endocrinologist. Nearly half (47%) of individuals who were uncertain or did not intend to receive the influenza shot indicated that they would be more inclined to get vaccinated if a healthcare professional advised it.[31] This highlights the need for targeted training to help HCPs consistently and effectively advocate for vaccination, particularly for high-risk and hesitant patients. It is important for HCPs to recognize that their active promotion and support of influenza vaccination can significantly contribute to reducing the overall burden of influenza in the community and protecting those who may not have access to vaccination or are at a higher risk of severe outcomes.

HCPs often encounter challenges in addressing patient concerns about vaccine efficacy, safety, and myths, which exacerbate vaccine hesitancy and leave high-risk populations vulnerable.[32] Post-pandemic, HCPs have expressed discomfort in initiating vaccine discussions due to various factors, including time pressures, staffing shortages, competing demands, personal burnout, insufficient organizational backing, and a general decline in trust toward the healthcare system and lack of skills to confidently navigate difficult conversations with vaccine-resistant patients.[27] Similarly, a survey of US HCPs highlighted barriers such as time constraints, the perceived low likelihood of changing patients' minds, and health issues taking priority, which hinder effective communication about influenza vaccination. Notably, physicians with higher confidence in discussing vaccines used more effective communication strategies, suggesting that educational interventions could improve vaccination rates.[33]

Another recent study that interviewed HCPs revealed that while some HCPs had received general communication training, it was rarely tailored to vaccination discussions. Although general communication skills are partially applicable, most providers expressed the need for specialized training and resources to confidently counter misconceptions and misinformation about vaccines, highlighting a critical gap in their ability to engage with vaccine-hesitant patients and diverse populations effectively.[27] Additionally, communication skills are often neglected in medical training.[34] This is reflected in vaccination training, which traditionally focuses on vaccine knowledge (risks, benefits, efficacy, and side effects) and the practical skills needed for administering vaccines. As a result, HCPs have expressed feeling uncomfortable and describe the conversations as "unpleasant" or "difficult" and have reported refraining from further conversations with patients who are hesitant to vaccines.[27]

What's more, healthcare providers acknowledged that while effective communication skills are crucial, developing and honing these skills remains a significant challenge due to the complexities of patient interactions and the need to tailor discussions to diverse concerns and levels of understanding.[27] Also, while several training interventions that encourage personalized, collaborative communication during vaccine-related consultations have been developed,[35–37] these interventions have not been systematically implemented in healthcare provider training programs.[38]

Increasing HCP knowledge and confidence in their vaccine communications skills are crucial for dispelling vaccine myths, increasing vaccine acceptance, and leading to improved population immunity.

Conclusion

In an era of widespread misinformation and declining vaccine confidence, up-to-date clinician knowledge and effective communication skills are critical tools for promoting vaccine uptake and preventing illness. This program will equip healthcare providers with the latest evidence-based guidelines on influenza vaccination and practical strategies to engage vaccine-hesitant patients more effectively. This program will enhance HCPs' confidence in navigating sensitive conversations by providing them with knowledge and skills that enable them to build trust, address misconceptions, and tailor discussions to individual patient concerns. This will enable HCPs to promote informed vaccine decision-making and strengthen public health efforts by reducing the spread of influenza.

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