

PRACTICE INSIGHTS



PHARMACY-BASED VACCINATION: IMPLEMENTATION OF RISK- BASED RECOMMENDATIONS



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Types of vaccine recommendations and their development

In the United States, CDC develops immunization schedules that indicate which vaccines are appropriate for specific types of patient populations based on recommendations from ACIP. ACIP makes several different types of recommendations, including routine (e.g., age-based), catch-up, risk-based, and shared clinical decision making:¹

1. **Routine (universal) recommendations** call for a vaccine to be administered to all members of the general population on a regular basis. Age-based recommendations call for routine vaccination of all individuals within a certain age group.
2. **Catch-up recommendations** apply to individuals who miss age-based recommended doses of vaccines.
3. **Risk-based recommendations** call for the vaccination of specific groups of people who are at increased risk of contracting a disease or experiencing severe outcomes from the disease. Risk categories can include certain health conditions, lifestyles, occupations, or living conditions.
4. **Shared clinical decision-making**

recommendations are individually based and informed by a decision process between the health care provider and the patient or parent/guardian. There is not a prescribed set of considerations or decision points in the shared clinical decision-making process. Under the shared clinical decision-making recommendations, pharmacists are considered health care providers authorized to administer vaccines.

ACIP recommendations include information regarding who should receive the vaccine, the number of doses needed, the amount of time between doses, as well as precautions and contraindications. Recommendations are based on evidence-based reviews of information, including:²

- **Safety and effectiveness of the vaccine.**
- **Severity of the disease.**
- **Number of people who get the disease if there is no vaccine.**
- **Cost-effectiveness of the vaccine.**
- **Practicality of putting the recommendations into practice.**

For transparency, ACIP provides “Evidence to Recommendations Frameworks,” which detail the information that was considered when developing the recommendations. These frameworks consider several domains, including public health, benefits and harms, values, acceptability, feasibility, resource use, and equity.³

A closer look at selected vaccines with risk-based recommendations: Pneumococcal, respiratory syncytial virus, and COVID-19 vaccines

Several vaccines have risk-based recommendations for use in the United States, including vaccines that prevent against pneumococcal disease, RSV, and COVID-19.

Multiple vaccines are recommended for the prevention of pneumococcal disease, including pneumococcal conjugate (PCV15, PCV20, PCV21) and pneumococcal polysaccharide (PPSV23)

Information presented here is based on the ACIP recommendations that were in effect at the time the roundtable was conducted (May 13, 2025).

Underlying medical conditions or other risk factors include alcoholism, chronic heart/liver/lung disease, chronic renal failure, cigarette smoking, cochlear implant, congenital or acquired asplenia, cerebrospinal fluid leak, diabetes, generalized malignancy, HIV infection, Hodgkin disease, immunodeficiencies, iatrogenic immunosuppression, leukemia, lymphoma, multiple myeloma, nephrotic syndrome, solid organ transplant, or sickle cell disease or other hemoglobinopathies.

People can self-attest to the presence of a risk factor. The following medical and other conditions increase the risk of severe RSV disease:

- Chronic cardiovascular disease (e.g., heart failure, coronary artery disease, congenital heart disease). Excludes isolated hypertension.
- Chronic lung or respiratory disease (e.g., COPD, emphysema, asthma, interstitial lung disease, cystic fibrosis).
- End-stage renal disease or dependence on hemodialysis or other renal replacement therapy.
- Diabetes complicated by CKD, neuropathy, retinopathy, or other end-organ damage.
- Diabetes requiring treatment with insulin or SGLT-2 inhibitor.
- Neurologic or neuromuscular conditions causing impaired airway clearance or respiratory muscle weakness (e.g., post-stroke dysphagia, amyotrophic lateral sclerosis, muscular dystrophy). Excludes history of stroke without impaired airway clearance.
- Chronic liver disease (e.g., cirrhosis).
- Chronic hematologic conditions (e.g., sickle cell disease, thalassemia).
- Severe obesity (BMI ≥40).
- Moderate or severe immune compromise.
- Residence in a nursing home.
- Other chronic medical conditions or risk factors that a health care provider determines would increase the risk of severe disease due to viral respiratory infection (e.g., frailty, concern for presence of undiagnosed chronic medical conditions, residence in a remote or rural community where escalation of medical care is challenging).

vaccines. Pneumococcal conjugate vaccination is recommended for all adults who are 50 years or older and for adults 19 to 49 years old with certain underlying conditions or risk factors who have not received a previous dose of a PCV vaccine or whose vaccination history is unknown.⁴

RSV vaccine is recommended for: ⁴

- **Women of any age who are pregnant and between 32 and 36 weeks of gestation from September through January in most of the continental United States who did not receive an RSV vaccine in a previous pregnancy.**
- **Unvaccinated adults aged 75 years or older.**
- **Unvaccinated adults aged 60 through 74 years and at increased risk for severe RSV disease.**

COVID-19 vaccine has a routine recommendation for most adults and a risk-based recommendation for adults with moderate or severe immunocompromise to receive additional doses. Additionally, during the roundtable, participants reported that ACIP was considering a switch to risk-based or hybrid recommendations for COVID-19 vaccine and that discussions regarding recommendations for COVID-19 vaccines are evolving.

ACIP held a policy-based discussion on April 15, 2025, about the use of COVID-19 vaccine. Policy options that were discussed for annual COVID-19 vaccine doses included:⁵

- **Option 1: Maintain a universal vaccine policy for everyone ages 6 months or older.**
- **Option 2: Risk-based recommendation only for groups at increased risk of severe COVID-19. (Notably, 74% of the adult population in the United States have at least one condition that puts them at risk for severe COVID-19.)⁵**
- **Option 3: Combination of risk-based and universal vaccine recommendations (e.g., risk-based recommendation for persons ages 6 months through 64 years and universal recommendations for adults ages 65 years or older).**

Policy options that were discussed for semi-annual COVID-19 vaccine doses included:⁵

- **Persons ages 65 years or older:**
 - Two doses per year for most; may be more if previously unvaccinated and receiving Novavax or immunocompromised.
- **Persons ages 6 months or older who are moderately or severely immunocompromised:**
 - Initial series if unvaccinated or post-immune ablative therapy.
 - Initial series is followed by two doses per year.
 - Additional doses can be administered under shared clinical decision making.

ACIP also discussed how to define who is at increased risk and how much increased risk is needed to be included in a risk-based recommendation.⁵

Coverage rates for these three vaccines remain low, indicating that there is a significant opportunity for pharmacists to improve vaccination gaps.

Exploring risk-based recommendations for vaccines in pharmacy settings

To learn more about pharmacists' knowledge, understanding, and perspectives regarding how risk-based recommendations for vaccines are addressed in pharmacy settings, the American Pharmacists Association conducted a national survey, fielded April 8, 2025, to June 2, 2025, and held a roundtable discussion on May 13, 2025. The survey was sent to active and expired APhA pharmacist members from a variety of pharmacy settings. Roundtable participants were pharmacists with practice and leadership roles who oversee, implement, and manage vaccination programs as well as other patient care services.

The survey and roundtable worked to identify gaps and opportunities to support pharmacists in their efforts to administer vaccines with risk-based recommendations to eligible patients. During the roundtable, the discussion focused on vaccines that are commonly administered as part of pharmacy practice, including but not limited to vaccines for pneumococcal disease, RSV, and COVID-19. This report summarizes the findings from the survey and roundtable.



Survey results

A total of 262 pharmacists responded to the survey on risk-based immunization practices; 204 (78%) reported that their current practice setting offers vaccine services to adults.⁶

Survey respondents were well distributed geographically. A large proportion (42%) worked in independent pharmacies; another 14% worked in chain pharmacies, 9% in ambulatory care pharmacies, and the remainder in other settings. Reported roles of survey respondents

and direct messages (Figure 1).⁶

Respondents reported high levels of confidence for applying knowledge regarding how to implement various types of vaccine recommendations to patients. However, not all were able to correctly identify which vaccines have risk-based recommendations. Only 83% indicated that there is a risk-based recommendation for RSV vaccine, followed by 78% for pneumococcal conjugate vaccine, and by 75% for COVID-19 vaccine.

1. CDC recommendations.
2. Patient risk factors.
3. Patient request.
4. Patient age.
5. Vaccine history and completion of all needed vaccines.

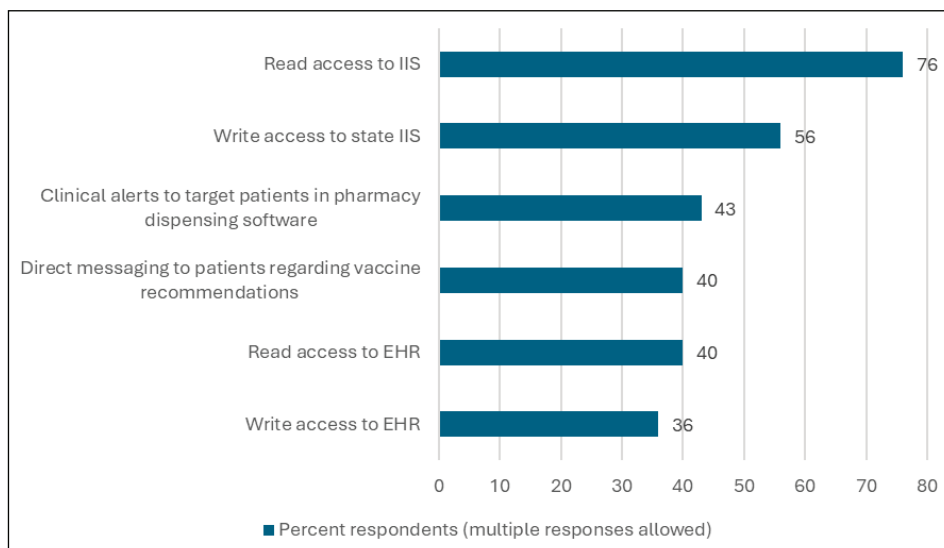
Respondents indicated that it can sometimes be difficult to identify patients who are appropriate to receive vaccines according to risk-based recommendations. Of the five options given to survey respondents, RSV vaccination for patients aged 60 to 74 years with risk factors was ranked highest for difficulty, followed by pneumococcal conjugate for patients aged 19 to 49 years with risk factors, and additional doses of COVID-19 for immunocompromised patients. Respondents reported the least difficulty identifying patients who are appropriate for meningococcal conjugate vaccine and Mpox vaccine.

Risk factors that were considered by at least 25% of respondents to be challenging to identify when evaluating a patient for risk-based vaccine recommendations included:⁶

- Neurologic or neuromuscular conditions causing impaired airway clearance or respiratory muscle weakness (26%).
- Chronic liver disease (27%).
- Chronic alcoholism (31%).
- Moderate or severe immune compromise (32%).
- Chronic hematologic conditions (34%).
- Gay, bisexual, or other males who have sex with males with risk factors (36%).

Persons who are sexual partners of gay, bisexual, or other males who have sex with males with risk factors (43%). Survey respondents reported using a variety

Figure 1. Technology tools available to assist with vaccine services



EHR = electronic health record; IIS = immunization information system. Source: Reference 6.

included overseeing vaccine services, administering vaccines, and setting vaccine policies for implementation in multiple pharmacies (Table 1).⁶

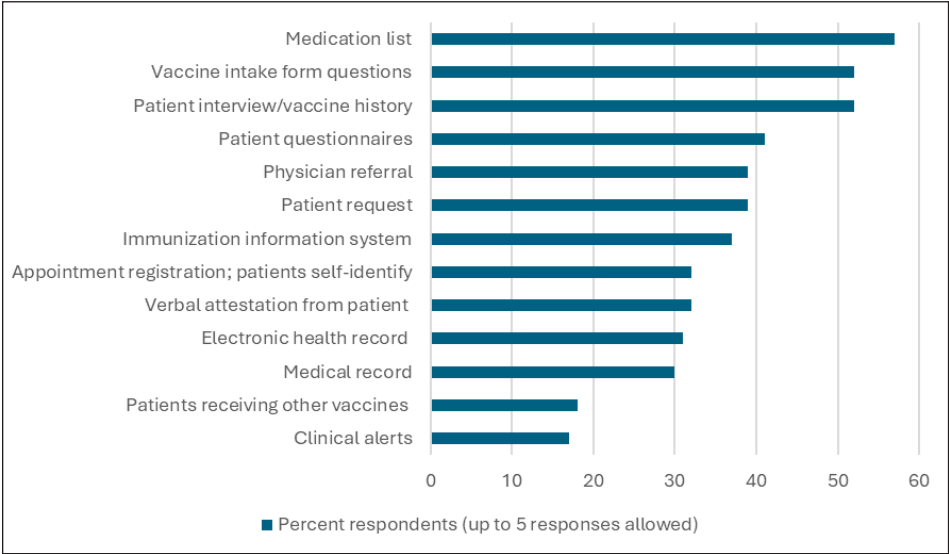
Respondents reported having access to multiple technology tools available within their practices to help with vaccine services, including access to state immunization information systems (IISs), EHRs, clinical alerts,

(Of note, at the time of the survey, there was a risk-based recommendation for a second dose of COVID-19 vaccine for immunocompromised patients; pharmacists may or may not have considered this to be a risk-based recommendation while taking the survey).⁶

Respondents rated the most important factors driving how they approach vaccines with patients. The top five were:⁶



Figure 2. Best strategies to identify patients for vaccination based on risk factors (n=155)



Source: Reference 6.

Figure 3. Respondent experiences with risk-based vaccination recommendations (n=139)

of strategies to identify patients for vaccination based on risk factors (Figure 2).⁶

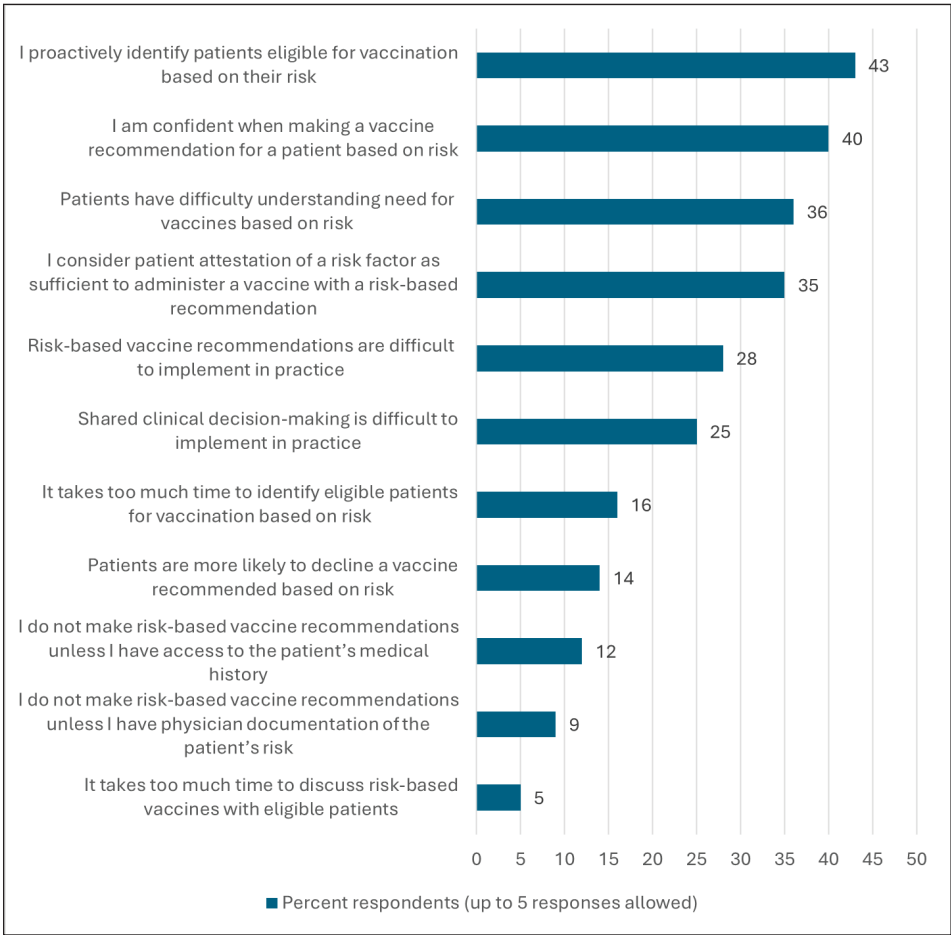
Respondents shared their perceptions of their experiences with applying risk-based vaccine recommendations in practice (Figure 3).⁶

Time constraints were identified by survey respondents as the most pressing challenge that limit the implementation of risk-based recommendations. Other common challenges included patient refusal and barriers to identifying the patient's risk.

Respondents shared several strategies that they use for implementing risk-based recommendations, including conversations with patients, alerts in dispensing software, reviews of EHR, comprehensive vaccination reviews, use of screening forms, discussions during the provision of other services such as

medication reviews, reviews of IIS, and responding to patient requests.

Additional strategies mentioned by respondents were improved technology tools for identifying appropriate patients, including improved EHR access and integration of EHRs with dispensing systems, modifications to state regulations to facilitate practice, and payment to support the time required for patient identification and education. They also indicated activities that could help to alter public perceptions about vaccines would be helpful for overcoming vaccine hesitancy, including both media campaigns and resources that could be used to support conversations in the pharmacy.⁶



Roundtable discussion

During the roundtable, participants performed a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis for pharmacists related to the provision of vaccines with risk-based recommendations (Table 2). Additionally, they engaged in focused discussion about implementation challenges for risk-based vaccine recommendations, tools for supporting implementation of recommendations in practice, patient identification and communication, and opportunities for the future.

SWOT analysis

Strengths that were identified by roundtable participants include the accessibility of pharmacists, notably for underserved communities and in rural areas. Furthermore, pharmacists generally offer vaccines at times (e.g., evenings, weekends) and locations that are typically more convenient for patients. Participants said that patients often go to their pharmacy for a vaccine because of easier accessibility compared with their physician's office. Pharmacies are also more likely to stock a wider range of vaccines than physicians' offices, which facilitates the process for vaccinating patients.

Pharmacists are well trained regarding vaccines and have more extensive vaccine-related training than many other providers who can administer vaccines. Thus, pharmacists have the knowledge and skills necessary to identify eligible patients and provide them with information about vaccines. Likewise, pharmacy technicians undergo robust training to be able to administer vaccines. Participants observed the growing roles of pharmacy technicians in immunization programs. Beyond

administering vaccines, technicians can also gather information from patients and state IISs to support pharmacists in making clinical determinations.

In many cases, pharmacists see patients on a consistent basis and have developed relationships with them. Patients regard pharmacists as trusted health care providers who are well prepared to educate and counsel them about risk-based vaccine recommendations.

Pharmacists are skilled at navigating third-party payment for vaccines and can help work with patients to ensure they meet requirements, where applicable, to have the vaccine covered.

Weaknesses include inconsistent access to EHRs, specifically for pharmacists practicing in community-based pharmacies. Therefore, pharmacists may have difficulty obtaining diagnosis codes and vaccination histories. Pharmacists generally cannot diagnose; consequently, if they do not have access to diagnosis codes, it can become complicated for them to conduct a clinical assessment of the appropriateness for vaccination. This weakness can be a common difficulty when trying to apply risk-based vaccine recommendations.

Obtaining complete vaccination histories can also be difficult. States have IISs that can provide information about vaccination history. However, most state systems are not interoperable so vaccines received in other states will not be obvious when checking an individual IIS, and it is not pragmatic to check all available systems.

Lack of payer coverage for pharmacists' time to provide education and counseling is a challenge. Even when vaccines are covered, low payment rates limit the allocation of resources to vaccine services (including staffing). Payment rates do not increase if a vaccine switches from an age-based recommendation to a risk-based recommendation, even though more time is needed to identify patients and provide education. Therefore, pharmacists may be less likely to proactively approach patients for more complex interactions. Further, these time pressures can affect pharmacy staff morale.

State laws and regulations that limit vaccine administration or require physicians to sign protocols or collaborative practice agreements are also a weakness in certain areas.

Opportunities for pharmacists include the potential to integrate vaccine services with existing pharmacy patient care services. For example, pharmacists who offer services such as medication management and medication synchronization (med sync) have greater opportunities to engage patients in conversations about vaccines and the processes associated with these services align with identifying and educating patients.

The potential to increase access to EHR and leverage other health information technology (HIT) tools was identified as an opportunity to improve the identification of appropriate patients. Importantly, for certain vaccines, individuals are able to self-attest to having conditions that put them at increased risk for certain diseases



and make them eligible to receive a vaccine. This provision facilitates the identification of appropriate patients by pharmacists, who may not always have access to a patient's entire medical record.

Additionally, participants indicated that opportunities to enhance collaborations with other health care providers and vaccine stakeholders could support the implementation of risk-based vaccination recommendations. They also called for increased advocacy to expand scope of practice, provider status, and payment opportunities.

Threats were also identified by roundtable participants. The current political landscape regarding vaccines was cited as an important threat that can undermine trust in vaccines and recommendations from pharmacists. They also recognized that patient expectations regarding the amount of health information and recommendations provided by the pharmacist vary greatly among practice settings. Further, if the pharmacist recommends something that was not mentioned by the physician or if the physician suggested a different time frame for a vaccine, the pharmacist's recommendation is likely to be dismissed.

Changing and narrowing vaccine recommendations makes it more difficult for health care providers to stay up to date on recommendations and to implement them in practice. Participants indicated that changing recommendations undermines trust in the information provided by pharmacists and other health care providers.

Another threat mentioned was limited payment opportunities for patient care services, which can restrict the amount of time that is practical to dedicate to patient identification and education.

Implementation challenges for risk-based vaccine recommendations

Roundtable participants expressed concerns that ACIP does not fully appreciate and consider the practical aspects of patient identification for vaccines when making risk-based recommendations. As a result, recommendations may be more complicated and updated more frequently than necessary.

Participants stated that in some cases, such as for hepatitis B, ACIP has broadened recommendations rather than focusing on high-risk individuals. They noted that simplified age-based and universal recommendations tend to be the most effective to implement in practice. Complex risk-based recommendations require more time for pharmacists to verify that a patient is appropriate for a vaccine as well as require more time to explain information to patients, but this time is generally not compensated.

Complexity of risk-based recommendations

Participants observed that age-based recommendations are simpler to implement than risk-based recommendations because they do not require knowledge about all of an individual's health conditions. On the other hand, risk-based recommendations require assessments of patients' medical information, which can be challenging because pharmacists may lack complete patient data at the point of care.

The complexity of risk-based categories can make it more difficult to determine whether an individual is a member of a high-risk category. For example, the chronic cardiovascular disease category for RSV vaccine is specific to heart

failure, coronary artery disease, and congenital heart disease but excludes isolated hypertension. Further, the definitions for high-risk categories can change on a rapid and ongoing basis. Thus, even though pharmacists are highly educated and well trained, determining whether a patient fits within a category can require a detailed assessment of current recommendations and health conditions.

Participants indicated that it is easiest to identify high-risk conditions that are linked to the use of certain medications. Such conditions can be identified in the pharmacy using HIT tools and prescription records. However, many high-risk conditions cannot be inferred from prescription records and, therefore, are more difficult for pharmacists to identify with HIT tools.

They noted that the self-attestation provision for high-risk conditions for some vaccines is useful for overcoming barriers to being able to confirm the presence of a condition. However, patients do not always fully understand their health conditions. For example, patients may not be certain whether they meet the criteria for being immunocompromised. Additionally, patients may be deterred from self-attesting when presented with long lists of unfamiliar health conditions, especially if they have low health literacy and do not know how to accurately answer questions about their health conditions.

Compensation challenges

Participants called for increased compensation opportunities for pharmacists to assess patient vaccination needs as well as to provide patient counseling related to vaccines. There are instances in which pharmacists can currently be compensated for these efforts, but there is also a need



to expand these opportunities so that pharmacists can provide more thorough vaccination-related care.

Additionally, risks of future audits by insurance companies can have a chilling effect on the implementation of risk-based vaccination programs. Some participants expressed concerns that third-party payers may retroactively change their interpretation of a risk-based category and request payment (clawbacks) for vaccines that they previously had paid. As a result, pharmacists may be unnecessarily cautious in determining whether to exclude a patient from a risk category. Furthermore, if patients' vaccination records are not complete, there is a chance that payers could refuse payment when pharmacists inadvertently administer a duplicate of a vaccine that had already been covered by a third-party payer.

Identifying vaccination needs and conducting patient outreach

Participants noted that for many patients, the request for a vaccine is a transactional event during which the patient requests a vaccine, completes paperwork, and receives the vaccine (assuming no contraindications). However, this approach overlooks patients who are unaware that they should receive a vaccine and those who are resistant to vaccination. While a more holistic and comprehensive approach to patient care and risk management would be ideal, it is often not feasible in busy pharmacy practices. Therefore, strategies that allow pharmacists to proactively identify and connect with appropriate patients would be beneficial.

To identify patients for risk-based vaccines, participants identified multiple opportunities to leverage HIT. For example, pharmacists who have

access to EHRs may be better able to gather information about patient diagnoses to ensure that vaccine recommendations align with patient health needs. Integration of EHRs and IISs could help to gather vaccine histories and automate the generation of vaccine recommendations. Additionally, pharmacies could implement real-time clinical alerts based on prescriptions (e.g., a prescription for insulin could indicate a patient has diabetes and requires relevant vaccines). This approach streamlines the process for making recommendations and provides the clinical rationale that can be explained to the patient. Alerts in the dispensing system could also be used to notify patients that they are due for vaccines when they come to pick up their prescription medications.

Participants mentioned that in addition to software tools embedded within pharmacy HIT systems, there are helpful apps for determining whether a patient is appropriate for a vaccine. For example, the PneumoRecs VaxAdvisor app from the CDC can be used by vaccine providers to determine which pneumococcal vaccines are appropriate for any given patient based on age, health conditions, and pneumococcal vaccination history.⁷

Moreover, participants indicated a desire to have a similar but more comprehensive app for use in pharmacy settings. Such an app would allow staff or patients to enter age and health conditions and in response the app would generate a list of recommended vaccines, schedule for administration, and provide other clinical decision-making tools as appropriate. Ideally, the app would have both patient-facing and provider-facing platforms so that patients could independently explore their health conditions and vaccine recommendations in order to arrive at the pharmacy well informed.

Scheduling systems can be helpful but can also create issues if patients schedule vaccines that are not appropriate for their medical conditions. Online schedulers do not eliminate the need to examine the patient's health and vaccine history, even when the patient self-attests to having a condition.

Although potentially helpful in identifying patients who are appropriate for various vaccines, participants noted that technology tools must be regularly updated to remain aligned with evolving recommendations. The implementation of updates may be delayed due to technical constraints. Additionally, not all pharmacists have access to or are comfortable with using clinical support technologies. Finally, participants cautioned that as much as HIT can streamline processes, these tools cannot replace clinical expertise. A pharmacist should carefully review recommendations and make the final determination about vaccine appropriateness for individual patients.

When HIT systems identify vaccine needs for patients, pharmacy staff can place tags or stickers on prescription bags to prompt staff to initiate a conversation about vaccines with the patient when the prescription medication is picked up. Participants suggested that having a way to record how a patient responds to a recommendation to receive a vaccine can allow messaging to be customized and adapted based on patient needs.

Some participants identified opportunities to streamline the process for making vaccination recommendations to patients. It was suggested that patients might be identified at the point of prescription pickup and be willing to receive a vaccine, although they may have to add significant time to their visit to go through the process of filling



out paperwork and re-entering the patient queue (or even returning at another time). Participants suggested proactively communicating vaccine recommendations to patients to more seamlessly integrate vaccine administration with the workflow for picking up prescription medications. Others reported using automated email systems to communicate vaccine recommendations with patients and encourage them to schedule appointments for vaccines. Pharmacies that offer med sync services can integrate vaccine recommendations into these services and communicate with patients about vaccines when receiving their regular prescription medications. This allows med sync appointments to be aligned with vaccination appointments so that all patient needs are managed in an efficient manner.

Participants said that occasionally patients present to the pharmacy for a vaccine because it was recommended to them by a physician, particularly if the physician does not stock the vaccine. For example, they noted that obstetricians refer patients who are pregnant for RSV vaccines.

Vaccine hesitancy and patient communication

Participants reported several strategies to address vaccine hesitancy, including working to create more time for pharmacists to assess needs, communicating vaccine needs to patients, and providing education and counseling about vaccines and their benefits while dispelling myths and misperceptions. Importantly, all of these tasks require time, which can be difficult to allocate in a busy pharmacy practice.

They reported that a strong recommendation to receive a vaccine can be persuasive, particularly when repeated consistently in a manner that

shows the pharmacist cares about the patient's health. Participants shared that messages such as "Nobody wants a shot, but I want to protect you and keep you out of the hospital" can be effective.

If patients are hesitant, the pharmacist can probe to understand the reasons why and engage in dialogue that may help assuage concerns, particularly if patients' fears are based on misinformation. Although patients may not immediately change their minds, establishing relationships based on trust and mutual respect can go a long way toward encouraging patients to accept future recommendations.

Participants identified that patients' trust may increase when they have a conversation with a health care provider who has reviewed their health status and conditions and is making a recommendation based on their individualized needs. For example, participants noted that they would make more robust recommendations to receive COVID-19 and influenza vaccines to older adults with multiple high-risk conditions than they would for healthy younger people. Yet, they also acknowledged that these in-depth conversations are not feasible in all practice settings.

Some participants indicated that vaccine fatigue is an issue among pharmacy staff, and maintaining staff engagement around vaccines can be difficult. Pharmacists can be hesitant to engage in conversation regarding myths and misperceptions because it can take a significant amount of time and energy to fully explain the science that supports the recommendation. They indicated that it would be helpful for national organizations to have more public information campaigns to counter myths and misperceptions so that patients can obtain accurate information from a range of sources.

Helpful resources for practicing pharmacists include conversation prompts to start dialogue on a range of vaccine-related topics. These could be developed for pharmacists, then modified for pharmacy technicians to engage patients and direct them to pharmacists for further discussion.

At times, pharmacists and staff are hesitant to approach patients about vaccines if there is concern that patients will react negatively. Highly resistant patients need to be approached with caution to avoid volatile situations. Ultimately, not all patients are going to be receptive to vaccine information, and pharmacists should use their judgment regarding what information to share and when, especially if a patient appears to be agitated by the conversation.

Finally, participants realized that, while addressing vaccine hesitancy is a central issue, there may also be patients who have a high level of concern about certain diseases and are eager to receive vaccines. Even though vaccines are generally safe and effective for most people, there can be risks associated with administering vaccines to people who should not receive them, and clinical assessments for appropriateness should always be performed.

Professional advocacy and collaboration

Roundtable participants emphasized the need for pharmacists to participate in "immunization neighborhoods." (Immunization neighborhoods are collaborative, community-based networks of vaccination stakeholders who work together to support timely and appropriate vaccinations.) For example, pharmacists can communicate and collaborate with their local health departments to advance vaccinations. They noted that such collaborations are important for states that require



individual physician protocols to administer certain vaccines because pharmacists may be able to identify a willing and responsive physician through the health department. Similarly, collaborations with immunization coalitions can be helpful.

Another challenge identified by participants is the need for more advocacy to update laws and regulations for statewide protocols for vaccines to remove logistical barriers related to collaborative practice agreements.

Participants recognized that not all physicians support pharmacists in making recommendations for patients to receive vaccines or recognize the role of pharmacists in the immunization neighborhood. This barrier is typically due to a lack of physician awareness about pharmacist education and training. Participants called for greater interprofessional educational opportunities and more collaboration throughout the immunization neighborhood to help counter these attitudes.

Strategies for adapting to changing recommendations

Roundtable participants expressed concerns that moving from age-based to risk-based vaccine recommendations reduces vaccination rates. Additionally, due to logistical constraints for operationalizing recommendations, it is not possible to immediately implement revised recommendations in practice. When ACIP updates vaccine recommendations, pharmacy leadership and pharmacists must take several actions to implement the changes, such as:

- **Educate all staff about the changing recommendations.**

- **Update collaborative practice agreements and protocols in states that require them for vaccination services. (In some states, these agreements are developed on a statewide level and can be readily updated. In other states, each practice must have a signed agreement with an authorized prescriber and must update these agreements every time there is a change.)**
- **Update all relevant HIT systems to reflect the change.**
- **Update patient intake and consent forms.**
- **Ensure that third-party payers are aligned with the new recommendations and will provide coverage.**

Participants noted that more tools are needed to help pharmacists efficiently integrate new recommendations when changes are made. Such tools could include both educational resources (for pharmacists, other pharmacy staff, and patients) and logistical support.

An important challenge noted by participants is communicating changing recommendations to patients. While the same message repeated with care over time can have an impact on addressing vaccine hesitancy, changing recommendations can cause confusion and erode trust. This frequently occurs for people who do not fully understand the scientific process or why vaccine recommendations change over time. Participants felt that having multiple changes in recommendations fuels public skepticism about vaccines, particularly for vaccines that have become political targets, such as COVID-19 vaccine. They also observed that since 74% of the adult population have at least one condition that puts them into a higher-risk category for severe illness from COVID-19, it would be reasonable to maintain universal recommendations.⁵

Participants noted that educational initiatives from national organizations such as APhA are incredibly helpful for pharmacists to understand changing vaccine recommendations. They attested to utilizing these educational programs to disseminate information within their organizations.

At times, patients prefer to wait until a new vaccine or recommendation has been in practice for some time to gather additional information about the risks and benefits of a vaccine before deciding to get vaccinated. This may be relevant for certain travel vaccines, such as chikungunya vaccine. In other cases, such as for RSV, people may choose to wait to receive the vaccine when they are older and potentially face greater risks from the disease.

Adding a patient care services coordinator (or similar position) to the pharmacy staff can establish an infrastructure that facilitates vaccinations as well as other patient care services. That individual can take the lead on identifying new vaccine information as it emerges and support its integration among practicing pharmacists. Additionally, the role can include gathering information at the state level and collaborating with immunization coalitions to address vaccine hesitancy.



Looking to the future

Pharmacists have played a crucial role in public health by expanding vaccine access and administration.⁸ As the vaccine landscape continues to evolve, emerging opportunities and new challenges must be addressed. Risk-based recommendations for vaccines complicate processes for pharmacists to identify and educate patients who are eligible for these vaccines. Strategies that leverage HIT tools and enhance

bidirectional access to EHRs and IISs can assist pharmacists with identifying appropriate patients by helping determine whether they are members of high-risk groups and gathering data about vaccination histories.

Changes to vaccine recommendations can be confusing to patients. Utilizing media campaigns to help educate the public about vaccine recommendations can be helpful. Furthermore, expanding

scope of practice and provider status for pharmacists related to vaccine authority and payment can support efforts and opportunities to vaccinate appropriate patients. Professional advocacy and engaging with the immunization neighborhood, including professional organizations and immunization coalitions, to build relationships can help advance these goals.

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Table 1. Demographics of respondents to the APhA survey on risk-based immunization recommendations

Parameter	Percent of Respondents*
Pharmacy practice setting	
Independent pharmacy (1–3 units)	42
Chain pharmacy (4+ units)	14
Ambulatory care pharmacy	9
Clinic (outpatient) pharmacy	8
Supermarket pharmacy	5
Hospital/institutional (inpatient) pharmacy	5
Mass-merchant pharmacy	4
Federal/military/Department of Defense	4
Long-term care pharmacy	2
Other	6
Position(s)[†]	
Staff pharmacist	47
Pharmacist-in-charge/manager	39
Vaccine coordinator/supervisor	20
Clinical coordinator	14
Pharmacist supervisor	12
Regional manager	3
District manager	1
Other	4
Role(s)[†]	
Administer vaccines	47
Oversee vaccine services in pharmacy	39
Set vaccine policy for implementation in multiple pharmacies	20
Not involved with overseeing vaccine services and do not administer vaccines	4
Year of entry-level pharmacy degree	
1983 or before	5
1984 to 1993	17
1994 to 2003	17
2004 to 2013	32
2014 to 2018	16
2019 or later	14
Pharmacy practice region	
Northeast	12
Midwest	24
South	43
West	19
Puerto Rico/Outside U.S.	2

*Percentages for survey responses may not add to 100% due to rounding.

†Multiple responses allowed.

Source: Reference 6. Bottom of Form



Table 2. SWOT analysis for pharmacist provision of vaccines with risk-based recommendations

Strengths	Weaknesses
<ul style="list-style-type: none"> • Extensive clinical knowledge and training to provide vaccinations • Trusting relationships with patients • Knowledge and skills to identify appropriate patients • Access and availability to patients • Pharmacy technicians and ancillary staff to support vaccination services 	<ul style="list-style-type: none"> • Time constraints • Regulatory restrictions such as protocol requirements • Limited access to EHR • Challenges remaining abreast of changing recommendations • Gaps in immunization information systems • Reimbursement limitations and challenges • Concerns about how to approach vaccine hesitant patients
Opportunities	Threats
<ul style="list-style-type: none"> • Existing patient care services (e.g., MTM) to facilitate implementation of vaccination services • Improving EHR access • Networking opportunities with immunization coalitions and others • Expanding provider status and reimbursement opportunities in some states 	<ul style="list-style-type: none"> • Political landscape regarding vaccines • Limited reimbursement restricts staffing • Audit risks • Challenges forming relationships with other providers

EHR = electronic health record; MTM = medication therapy management.





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