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Texas Immunization Quality Improvement for Providers (IQIP) Resource Binder for Providers

TEXAS
Health and Human Services

Texas Department of State Health Services

Introduction

The Texas Department of State Health Services (DSHS) Immunization Unit prepared the Immunization Quality Improvement for Providers (IQIP) Resource Binder for use by providers enrolled in the Texas Vaccines for Children (TVFC) and Adult Safety Net (ASN) programs. This document serves as a companion document to further explain the required activities included in the "Program Evaluation" chapter of the Texas Vaccines for Children and Adult Safety Net (TVFC/ASN) Provider manual.

The purpose of this binder is to consolidate IQIP resources and information into one source document for providers. The content is intended for clinics or eligible facilities to improve immunization processes and ultimately increase vaccine coverage rates. The resources included in this binder inform providers about the IQIP process and expand upon the technical assistance given during the initial site visit. They are not comprehensive of all the resources a provider might use to implement the selected IQIP strategies, but a great toolkit to guide activities, inform process changes, and communicate the importance of vaccination to patients.

Consultations on the policies in this binder are conducted routinely with the Centers for Disease Control and Prevention (CDC), DSHS, and other organizations. Throughout the year, the DSHS Immunization Section will distribute new resources. During the annual update of this binder, all previous resources from the prior year will be incorporated.

Texas Department of State
Health Services

Immunization Quality Improvement for Providers (IQIP) Program

Operations Manual for Providers

Version 1.0
Revision Date: 03/2022

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Introduction

The Texas Department of State Health Services (DSHS) Immunization Unit prepared the Immunization Quality Improvement for Providers (IQIP) Operations Manual for use by Texas Vaccines for Children (TVFC) providers and associated partners. Consultations on the policies in this manual are conducted routinely with the Centers for Disease Control and Prevention (CDC), DSHS, and other organizations.

The purpose of this manual is to consolidate IQIP policies and information into one source document for TVFC providers. Content includes information on the IQIP process, technical assistance guidance, and DSHS specific policy guidance.
Throughout the year, the DSHS Immunization Section will distribute new policies to TVFC providers. During the annual update of this manual, all previous policies from the prior year will be incorporated. This document serves as a companion document to further explain the required activities included in the "Program Evaluation" chapter of the Texas Vaccines for Children and Adult Safety Net (TVFC/ASN) Programs Operations Provider Manual.

Immunization Quality Improvement for Providers (IQIP) Background and Overview

Background

The Federal VFC program was created by the Omnibus Budget Reconciliation Act of 1993. The program was officially implemented in October 1994. VFC funds were awarded to state/local jurisdictions to conduct quality assurance reviews (QARs or VFC visits), which were formal site visits to assess VFC-enrolled providers' compliance with the requirements of the VFC program, beginning in 1995. In the same year, the Senate instructed the CDC to "ensure that all states receiving Section 317 immunization funds, conduct

annual provider assessments in all public clinics using the CDC-approved methodology, ”1 which later evolved into a program known as “Assessment, Feedback, Incentives, and eXchange” (AFIX). The assessment visits were implemented in public-sector clinics to improve immunization practices and vaccination coverage.

In 1999, the National Vaccine Advisory Committee (NVAC) recommended that all immunization providers, both public and private, should have their vaccination coverage assessed annually and that private providers should be assisted in this effort by state and local health departments. This recommendation provided support to expand implementation of AFIX to private provider settings. In 2000, the Task Force on Community Preventive Services completed a review of immunization-focused quality improvement (QI) literature and "strongly recommended" assessment and feedback (key components of the AFIX process) in the Guide to Community Preventive Services (Community Guide). The separate VFC and AFIX initiatives were combined in 2000 to allow the programs to achieve a broader reach among both public and private providers. That year, supplemental funds were awarded to 37 awardees to support a combined VFC-AFIX initiative. A 2011 update of the task force’s review concluded that assessment and feedback remained effective interventions for improving vaccination coverage.

Recommendations from the CDC scientific and programmatic staff in 2017–2018, resulting from operational research and an internal evaluation of the AFIX program, focused on the need to refine the CDC’s approach to provider-level immunization QI efforts. Recommendations also focused on the need to scale such efforts to function within the boundaries of constraints faced by the CDC and awardee immunization programs as well as the current health care environment. Those recommendations resulted in the transition from AFIX to IQIP.

IQIP Program

IQIP is an immunization quality improvement program for health-care providers enrolled in the TVFC Program. The purpose of IQIP is to promote and support the implementation of provider-level quality improvement

strategies. IQIP strategies are designed to support health-care providers in identifying opportunities to increase vaccine uptake in adherence with the Advisory Committee on Immunization Practices (ACIP)-recommended routine immunization schedule by improving immunization service delivery and ensuring that providers are:

- Aware of and knowledgeable about their vaccine coverage and missed opportunities to vaccinate.
- Motivated to try new immunization service delivery strategies and incorporate changes into their current practices.
- Capable of sustaining changes and improvements to their vaccination delivery services.
- Able to use available data from the Immunization Information System (IIS) and/or Electronic Health Record (EHR) to improve services and coverage.

The core quality improvement strategies of the IQIP Program will support TVFC providers by focusing on two of the following:

- Immunization appointment scheduling practices.
- Leveraging the reporting functionality of the statewide immunization registry, ImmTrac2.
- Giving a strong vaccine recommendation (including emphasis on HPV vaccine for providers with adolescent patients).
- Strengthening vaccination communications.

Using the IQIP process, TVFC-enrolled providers will be assessed on immunization delivery practices and will collaborate with IQIP consultants to identify strategies that will enhance their immunizations workflow to improve vaccine uptake. Vaccination coverage is measured at or near the time of an initial contact (site visit) to establish baseline performance and again one year later to evaluate progress. Technical assistance and support are given via telephone calls at two- and six-month intervals to aid providers in staying on course with their Strategy Implementation Plans (SIPs). At the end of 12

months, a final discussion of SIP progress and sustainability of practice changes occurs.

Figure 1-1 details the IQIP process in stages.

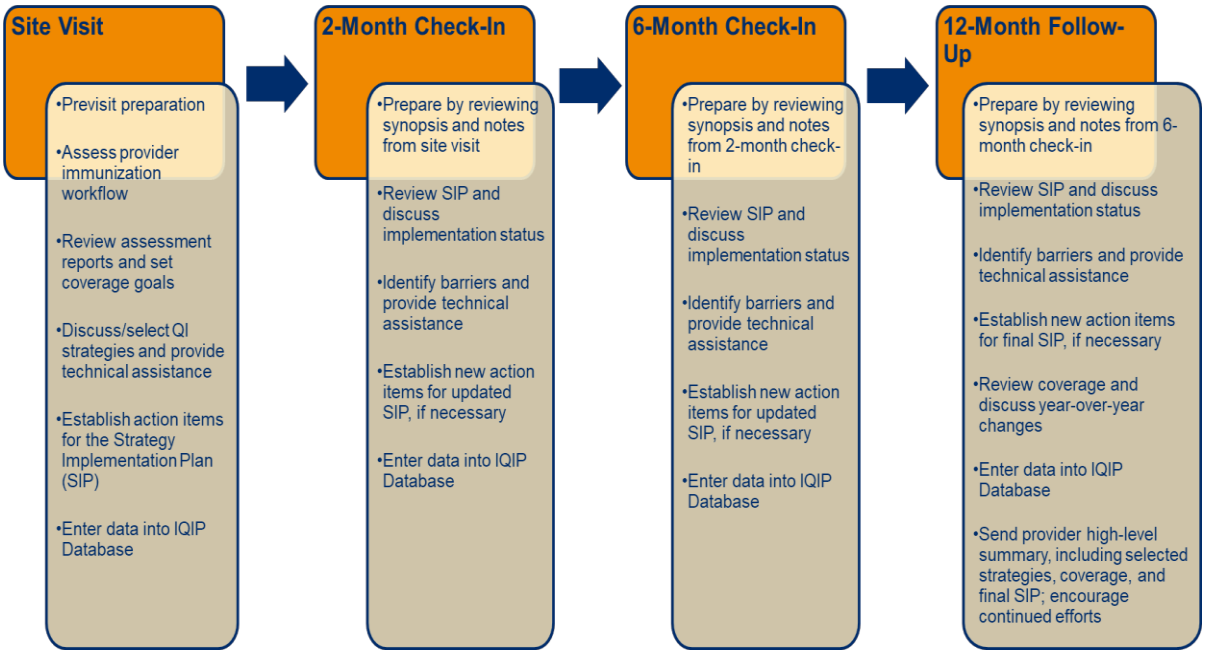

Figure 1-1: IQIP Process

Texas Vaccines for Children (TVFC) Program

The TVFC Program provides low-cost vaccines to eligible children from birth through 18 years of age. The mission of this program is to remove barriers to immunizations by allowing private providers to immunize eligible patients in their communities at little to no cost to the parent. Today there are more than 3,000 Texas providers enrolled in TVFC. The TVFC Program enables over 4.3 million Texas children to have access to immunizations. This is accomplished through a network of support provided by DSHS and with assistance from PHRs and contracted LHDs. These organizations function as Responsible Entities (REs) to ensure compliance with state and federal requirements in their jurisdiction.

ImmTrac2

Texas uses ImmTrac2 as the statewide immunization registry, which IQIP leverages to assess vaccine coverage data. DSHS offers ImmTrac2 at no cost to all Texans. The registry is secure and confidential, and safely consolidates and stores immunization records from multiple sources in one centralized system. Texas law requires written consent by individuals to participate in the registry. Written or electronic consent for ImmTrac2 is required for an individual who is 17 years of age or younger and must be obtained once for participation. Consent of the individual's parent or guardian must be submitted to DSHS. After consent is submitted, the individual's immunization information will be included in the registry until the individual is 26 years of age. If consent is not collected during the immunization visit, the individual's immunization administration will not be accounted for when vaccination coverage rates are assessed.

Access to the registry records is for those who have authorization. Authorized organizations include health-care providers, schools, and public health departments. The registry is part of the initiative to increase vaccine coverage across Texas. More information can be found at the ImmTrac2 website at **https://immtrac.dshs.texas.gov/TXPRD/portalHeader.do**.

ImmTrac2 Registry Education

All TVFC Providers receiving a site visit will receive IQIP and ImmTrac2 education resources. These education materials have been developed to provide guidance on how to improve reporting of vaccination administrations into ImmTrac2, and best practices to increase childhood and adolescent vaccination coverage rates at the provider site.

ImmTrac2 Resource Packet

All TVFC Providers will receive an ImmTrac2 resource packet and hands-on training during their scheduled IQIP visit. The packet will include the

following guidance documents:

- ImmTrac2 Data Quality Guide
- ImmTrac2 Texas Immunization Provider Summary (TIPS) Report Guide
- Guide to Reminder/Recall Report
- Creating a List of Active Clients with the Ad Hoc List Report
- ImmTrac2 Brochures

ImmTrac2 Data Quality Guide

The ImmTrac2 Data Quality Guide is an overview of common issues identified that result in inaccurate data reported into ImmTrac2. These common issues may explain why childhood and adolescent vaccination coverage assessment rates may not be accurate during the initial evaluation.

ImmTrac2 Texas Immunization Summary (TIPS) Report Guide

The ImmTrac2 Texas Immunization Summary (TIPS) Report Guide is a report that includes the provider's registered organization information listed in ImmTrac2, an overall summary of user activity, online activity, and data exchange activity for the previous month. This data will assist the provider in identifying how many records are being reported to ImmTrac2, accepted, and rejected monthly. Please reference the document at **www.dshs.texas.gov/immunize/immtrac/forms.shtm**.

Guide to Reminder Recall Report

The Guide to Reminder Recall Report can be generated in ImmTrac2 to help the provider increase immunization levels in their practice. This report gives step-by-step guidance on how to create lists of patients who are due or overdue for immunizations. The reminder recall system also has the capability to create and print mailing labels.

Creating a List of Active Clients with the Ad Hoc List Report

All patients assigned to the provider's organization in ImmTrac2 are included in the initial assessment of the coverage assessment rates. An Ad Hoc List

Report in ImmTrac2 allows for providers to review patients and determine which ones are considered active. For the patients no longer seen at the provider site, providers can de-activate patients in ImmTrac2. This guidance document assists providers with defining filters for specific clients and choosing a sort order for the report to inactive or move or gone elsewhere (MOGE) the clients assigned to the site.

ImmTrac2 Technical Assistance

ImmTrac2 Customer Service Team

The ImmTrac2 Customer Service team will work with providers to reset passwords and provide guidance on how to generate the TIPS Report, Patient Active/Inactive List, and Reminder Recall reports in ImmTrac2. For further assistance, please contact the ImmTrac2 Customer Service Team at 800-348-9158, or email at ImmTrac2@dshs.texas.gov.

ImmTrac2 Inter-Operability Team

The ImmTrac2 Inter-Operability Team works with providers to ensure accurate exchange of medical records into the state registry. They serve as direct support to the provider, and will work diligently to assist in identifying, addressing, and resolving technical issues in collaboration with the provider and EHR vendor. Over the course of 12 months, a representative from this team will work closely with the provider to resolve reporting issues. Contact information for the ImmTrac2 Inter-Operability Team is 800-348-9158, option 3, or email at ImmTracMU@dshs.texas.gov.

Site visits

Provider selection

The TVFC Program is required to initiate IQIP site visits on 25% of the CDC-defined IQIP candidate TVFC-enrolled providers annually. The exact number is determined by the CDC using the TVFC provider data in Provider Education, Assessment, and Reporting System (PEAR). In addition, the TVFC program continues other IQIP activities with providers already engaged in the process.

Providers are selected based on the following criteria:

- TVFC Provider Evaluation and Assessment Reporting System (PEAR) Compliance due date,
- Patient population as assessed in ImmTrac2, and
- Vaccination coverage rates, which are prioritized into high and low categories.

Overview

By signing the TVFC Program Agreement, the signing clinician agrees to allow DSHS or DSHS quality assurance (QA) contractors to conduct site visits at least every other year at their site.

The IQIP Site Visit includes a TVFC Questionnaire and an Immunization Quality Improvement for Providers (IQIP) visit. A core component of this visit is to focus on assessing provider-level vaccination coverage rates using the data reported to ImmTrac2. During the IQIP site visit, staff at the facility will receive a SIP that will include quality improvement strategies, ImmTrac2 resources, and instructions on action items to be implemented at the facility. Check-in activities will occur by phone at 2-months, 6- months, and 12-months by the RE or designated IQIP consultant. At 12-months, the provider's coverage assessment rates will be re-evaluated. Once this portion of the site visit is completed, the site reviewer will transition into the TVFC Compliance portion.

Preparing for the IQIP Site Visit

In preparation, the provider should provide adequate workspace for the consultant to meet with at least one TVFC coordinator. It is recommended a prescribing physician and the designated IIS contact person be present to be informed of recommended improvements identified during the IQIP visit. Wi-Fi should also be made available for the consultant to document site visit activities. Lastly, providers should have ready access to their Secure File Transfer Protocol (SFTP) portal at the time of visit to assist in timely data pulls for the consultant.

Providers will receive a scheduling call and a site visit confirmation letter in advance of the visit which includes details about the site visit date, time, and how long the visit will approximately take.

The following documents will be made available to the consultants by DSHS TVFC Program monthly to share with the provider during the visit:

- Childhood and adolescent vaccination coverage rates
- Texas Immunization Provider Summary (TIPS) Report

Assessing Provider Immunization Workflow

The IQIP Site Visit will begin with a discussion about the provider's immunization workflow. The conversation should involve the provider describing each step of their immunization workflow from the moment the patient enters the clinic through the administration of the vaccines, documentation on the patient's medical record, and scheduling of the next immunization visit.

Consultants will discuss steps taken at the provider site to prepare for a patient immunization visit and will assess immunization service delivery through the completion of a patient visit. A SIP will be developed in collaboration between the provider point of contact, and the consultant that will outline the quality improvement strategies selected, supporting action- items, and check-in activities.

Childhood and adolescent vaccination coverage rates will be presented by the consultant at the initial IQIP visit and 12-month check-in, and coverage goals will be agreed upon for the provider's SIP. Vaccination coverage rates are discussed in more detail in the *Vaccine Coverage Rate Reports* section on page 11.

IQIP Immunization Champion

During the IQIP site visit, an Immunization Champion is highly encouraged to be identified to participate in the initial IQIP site visit, and to take lead on immunization activities within their clinics. This individual will be responsible for developing and improving clinic policies, implementing the strategies selected in the SIP, training and educating staff, and staying up-to-date on

vaccine recommendations. During the visit, the IQIP Consultant should reference the Immunization Champion resource document to lead discussions during this portion of the visit. Once the Immunization Champion is identified, the contact information for this person should be collected and documented in the IQIP Database.

Initial IQIP Site Visit Process

During the site visit, consultants will guide providers to:

I. Initiate the site visit with introductions, purpose of the visit, and overview of the IQIP process.
II. Review vaccination coverage rates and vaccination policies for patients.
III. Discuss of the role of immunization champion.
IV. Review and assess provider vaccination workflow in relation to the IQIP strategies.
V. Review assessment reports to identify opportunities for improvement.
VI. Discuss and select IQIP strategies.
    a. Schedule the next immunization visit before the patient leaves the office
    b. Leverage IIS Functionality to support immunization practice
    c. Give a strong vaccine recommendation
    d. Strengthen vaccine communications
VII. Develop action items, which will combine to form the Strategy Implementation Plan.
VIII. Wrap up by discussing next steps and establishing tentative dates for the 2- and 6-month check-ins and 12-month check-ins.

Check-in Activities

The provider's 2-month, 6-month, and 12-month check-in dates will be scheduled at the initial site visit. The check-in activity will be conducted by IQIP consultants via phone. Consultants will check- in with the provider to see how well their SIP is working and provide additional technical assistance to aid in provider progress. At 12 months, another check-in call will be conducted by consultants to reassess the provider's childhood and

adolescent vaccination coverage assessment rates. After the 12-month check- in is completed, the provider's IQIP cycle will be finished for the year.

Additional technical assistance between check-ins is available to providers through their regular RE.

During the 2-, 6-, and 12-month check-ins, consultants will:

I. Contact each provider by phone no later than 10 days from the tentative check-in date outlined during the site visit.

II. Discuss the Texas Immunization Provider Summary (TIPS) Report with the provider.

III. Review the implementation plan with the selected strategies and document the progress as communicated by the provider.

IV. Provide further technical assistance and action items for the next check-in. Review information thoroughly with the provider to ensure a clear understanding of guidance documents.

V. Notify provider of next check-in activity date.

VI. If this is the provider's 12-month check-in, consultants will:

a. Insert and discuss the most recent vaccination coverage rates as provided by DSHS.

b. Discuss any improvements and inform provider of the outcome of the SIP.

c. Send an electronic copy of the IQIP Synopsis Report to the provider contact person.

Vaccination Coverage Rate Reports

IQIP coverage assessment rates help providers monitor, evaluate, and select strategies to improve provider performance in vaccinating pediatric patients on time and in adherence to the ACIP-recommended routine schedule.

Vaccination coverage rates will be evaluated based on the vaccine administrations reported to ImmTrac2 for the provider's active patients. Active patients are those that the provider has a responsibility for

vaccinating. Interpretation of coverage rates may be complicated by including inactive patients for whom the provider no longer holds the responsibility for vaccination.

Texas Department of State Health Services (DSHS) Texas Health and Safety Code 161.007 – 161.009 requires all medical providers to report all immunizations administered to clients who are younger than the age of 18 to ImmTrac2 within 30 days.

During the initial site visit, providers are given ImmTrac2 resources that address creating a list of active/inactive patient lists. It is imperative staff at the provider office learn how to properly maintain their ImmTrac2 data.

IQIP is designed to evaluate on-time vaccination and assess childhood patient vaccination coverage at two years of age, and adolescent patients at 13 years of age. Provider vaccination coverage rates are determined based on all the immunization records reported into ImmTrac2. To ensure providers are in accordance with Texas Health and Safety Code 161.007 – 161.009, the vaccination coverage rates will communicate two messages:

(1) how well the provider's EHR is at reporting vaccine administrations into the statewide registry, and
(2) how successful the provider is at vaccinating their patient population on-time according to the ACIP vaccination schedule.

Cohort	Age	Vaccine Series
Childhood	24 months	4:3:1:3:3:1:4 4 DTaP 3 Polio 1 MMR UTD Hib 3 Hepatitis B 1 Varicella UTD PCV
Adolescent	13 years of age	1 Tdap 1 MCV UTD HPV 1 HPV

*UTD = Up-to-date

Please Note: There may be some discrepancies regarding the initial rates pulled due to issues with EHR systems reporting vaccine administrations to ImmTrac2. Action-items outlined to support the *Leveraging the IIS functionality* strategy will help resolve these issues within a 12-month timeframe.

Vaccination Coverage Goals

Based on the provider's current vaccination coverage rates for the previous 12 months, the consultant will suggest coverage goals to meet by the end of the IQIP cycle. If the default coverage goals are not agreed upon, they can be modified as needed.

In the tables below, IQIP database logic is displayed for childhood and adolescent age group coverage goals.

Table: Logic for suggested 12-month childhood coverage goals

Initial Coverage	Suggested 12-month Coverage Goal
0% to less than 80%	Increase by 10 percentage points
80% to less than 85%	Increase to 90%
85% to less than 90%	Increase by 5 percentage points
90% to less than 95%	Increase to 95%
95% and greater	Maintain initial percentage

Table: Logic for suggested 12-month adolescent coverage goals	
Initial Coverage	**Suggested 12-month Coverage Goal**
0% to less than 70%	Increase by 10 percentage points
70% to less than 75%	Increase to 80%
75% to less than 90%	Increase by 5 percentage points
90% to less than 95%	Increase to 95%
95% and greater	Maintain initial percentage

IQIP Website

Additional information about IQIP can be found on the DSHS Immunization Unit website. The webpage can be accessed at https://www.dshs.texas.gov/immunize/Responsible-Entities/Quality-Assurance-for-TVFC-Providers/ .

IQIP Functional Inbox

Email all questions or inquiries to the IQIP functional inbox at **IQIP@DSHS.TEXAS.GOV**.

Please Note: *The Texas IQIP Resource Binder for Providers will continue to undergo changes as we assess and adjust program implementation. Updates will be announced, and policy documents will be revised and edited as needed.*

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TEXAS
Health and Human Services

Texas Department of State Health Services

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The Role of the Immunization Champion

IQIP
IMMUNIZATION QUALITY IMPROVEMENT FOR PROVIDERS

What does an immunization champion do?

- Immunization champions take the lead on immunization promotion activities in their clinics.
- By demonstrating leadership, collaboration, and advocacy, they ensure that the children in their care receive all the recommended vaccines on time.

Why be an immunization champion?

- Children rely on the champions in their lives to keep them safe and healthy.

Who can be an immunization champion?

- These champions may be physicians, nurses, or other health care professionals.

Here are ways you can be an immunization champion in your clinic

Facility Processes

- Develop and guide the implementation of procedures that support on-time vaccination of every child seen.
- Routinely assess procedures to ensure vaccination workflow continues to support the practice's vaccination policy and on-time vaccination.
- Conduct workshops in which clinic staff discuss barriers to vaccinating patients on time and ways to improve.

Training and Education

- Display Advisory Committee on Immunization Practices (ACIP) recommendations throughout the clinic.
- Train staff quarterly on ACIP recommendations, minimum ages and intervals, and contraindications.
- Ensure all office staff can accurately answer parent and/or patient vaccine-related questions or refer them to the appropriate resource.
- Work with staff to make sure they are comfortable addressing common parent and/or patient concerns or hesitancy about vaccines.
- Observe staff during vaccination visits and provide feedback.

Immunization Documentation

- Routinely check to ensure the clinic is reporting vaccinations and immunization status to the immunization information system (IIS) in a timely manner.
- Perform spot checks for completeness and accuracy of clinic immunization records.
- Regularly check patients' active/inactive status in the IIS and update if necessary.

Communications

- Stay up to date on vaccine recommendations and immunization quality improvement.
- Develop and propose social media posts. Research vaccine content to add to website.
- Make sure all vaccination promotion materials reflect current recommendations.
- Stay up to date on facility- or provider-level vaccination coverage. Share and discuss results routinely
- with staff, working together to evaluate progress and identify performance gaps.
- Update clinic staff on status of key immunization performance measures (e.g., missed opportunities, staff knowledge of vaccine recommendations, IIS data quality, etc.).

IQIP
IMMUNIZATION QUALITY IMPROVEMENT FOR PROVIDERS

At-A-Glance for Providers

IQIP is CDC's national, Vaccines for Children (VFC) provider-level immunization quality improvement (QI) program.

IQIP promotes and supports implementation of provider-level strategies designed to increase on-time vaccination of children and adolescents.

IQIP strategies

- Schedule the next vaccination visit before the patient leaves the provider site
- Leverage IIS functionality to improve immunization practice
- Give a strong vaccine recommendation (emphasize HPV vaccine if provider has adolescent patients)
- Strengthen vaccination communications
- Custom strategy based on state or local public health priorities

IQIP Process

IQIP is a 12-month process where public health representatives and VFC providers collaborate to identify QI strategies to increase vaccine uptake by improving and enhancing vaccination workflow.

Site visit

- Observe provider workflow
- Review initial coverage
- Select QI strategies
- Provide technical assistance
- Choose action items for Strategy Implementation Plan

2-month and 6-month check-ins

- Review progress toward strategy implementation
- Provide technical assistance
- Update Strategy Implementation Plan

12-month follow-up

- Review progress toward strategy implementation
- Provide technical assistance
- Review year-over-year coverage change

Description of IQIP Core Strategies for Providers

Immunization Quality Improvement for Providers (IQIP) promotes and supports implementation of provider-level strategies designed to help increase on-time vaccination of children and adolescents. The IQIP core strategies call for quality improvement activities that focus on improvements to the vaccination workflow.

IQIP supports both implementation *and* improvement of these core strategies. If your practice is already using one of these strategies, IQIP may give you the opportunity to further advance your efforts within that strategy and develop new action items to improve your vaccination workflow.

Schedule the Next Vaccination Visit before the Patient Leaves the Provider Site

On-time vaccinations depend upon providers communicating to patients and parents the importance of returning for subsequent doses in adherence to the ACIP schedule. Scheduling the next visit before the patient leaves the office can help with this effort. This IQIP strategy will allow providers to address gaps in coverage that may exist because of missed opportunities or scheduling oversights.

Providers have several opportunities during a patient visit to address this strategy. Some examples are:

- In the exam room: How do the provider staff talk to parents/patients about the timing of the next dose and the importance of receiving vaccines on schedule?
- The site's current scheduling process: Can scheduling the follow-up visit take place in the exam room or before the vaccine is administered?
- Software capacity: What are the capabilities of your scheduling software? Are there limitations or opportunities that the software may be able to address?
- Patient check-out: Are check-out staff trained to understand minimum intervals for vaccine efficacy and how to reaffirm the importance of staying on schedule for subsequent doses?

Leverage the Immunization Information System (IIS) to Improve Immunization Practice

Providers and patients both benefit from a well-maintained immunization information system (IIS). The IIS can provide consolidated vaccination records, forecast upcoming due dates to assist with scheduling, and send reminders for upcoming appointments. The IIS also helps providers to manage vaccine inventory and to self-monitor vaccination coverage to identify areas for improvement.

Some questions to consider include:

- Are you able to run reports regularly? Are coverage assessments a component of staff meetings and included in decision-making about changes at the clinic?
- How are data entered, and who monitors data quality?
- If you consider your EHR records to be more timely, complete, or accurate than the IIS records, why is that? What can be done to align the data in both platforms?
- Are you using all available IIS functions that can boost your vaccination workflow?

Give a Strong Vaccine Recommendation (include HPV vaccine if the provider has adolescent patients)

A 2018 national poll found that 93% of parents identified their child's doctor as their most trusted source of vaccine information (CDC, unpublished). This IQIP strategy reinforces the importance of the provider-parent and provider-patient discussion. Selection of the strategy allows your clinic to place emphasis on training and resources focused on the evidence-based presumptive announcement method of vaccine recommendation.

Some questions to consider, even if you already incorporate this strategy:

- How do you recommend vaccines due at that visit to patients/parents?
- Have you received training about presumptive language for vaccine recommendation? Do you use a presumptive approach for both adolescent and childhood vaccines?
- How do you respond to hesitancy when recommending vaccines? How do you respond to common vaccine myths and misconceptions?
- Does your clinic serve adolescent patients? This strategy can be used to improve HPV vaccine uptake.

Strengthen Vaccination Communications

This strategy seeks to highlight the importance of promoting vaccination and helping sites increase positive messaging about vaccination to their patients. The strategy includes the development, review, and dissemination of the provider's vaccination policy for patients. The strategy also includes other approaches to vaccination messaging, such as posting flyers and posters throughout the site and including vaccine-related content in emails, mailings, website content, and social media posts.

Think about your current approach to vaccine communications and consider these opportunities for improvement:

- How does your clinic promote the importance of on-time vaccination to new and existing patients?
- Do you have a patient vaccination policy or philosophy? How is it shared or made available to patients and parents?
- What materials do you present and share to promote and explain vaccinations above and beyond the required vaccine information sheets (VIS)?
- Do you have a website or utilize social media platforms? How can you incorporate positive vaccine messaging into these platforms?
- How does your staff respond to vaccine hesitancy? Would staff benefit from training on common myths and misconceptions and how to respond to them?

Interconnectedness of IQIP Core Strategies

Though they emphasize different aspects of a provider's routine vaccination workflow, the four core IQIP strategies complement each other. For example, a well-maintained IIS helps to inform a strong vaccine recommendation, and it also helps to ensure that subsequent visits are scheduled to complete each vaccine series on time. Similarly, when a site has a clear vaccination policy that all patients are aware of, it makes it easier for providers to give a strong recommendation in the exam room and stress the importance of scheduling the next vaccination appointment before the patient leaves. It is important when selecting and implementing these QI strategies to consider the ways in which they complement each other and depend upon engagement of staff across the practice.

Data Quality Guide - Common Issues of Inaccurate Report Data

1. Logging in with the Wrong Org Code

Users who are associated to multiple organizations could potentially log into ImmTrac2 with the wrong Org Code. This could add immunizations to an organization that did not administer the vaccine.

1A. How Do I Know If I Am Associated to Multiple Organizations?

After successfully logging into ImmTrac2 you will see the Manage Access screen. A user may be associated to multiple organizations. See *Figure 1 – User in Multiple Organizations* in which a user is associated to four different organizations.

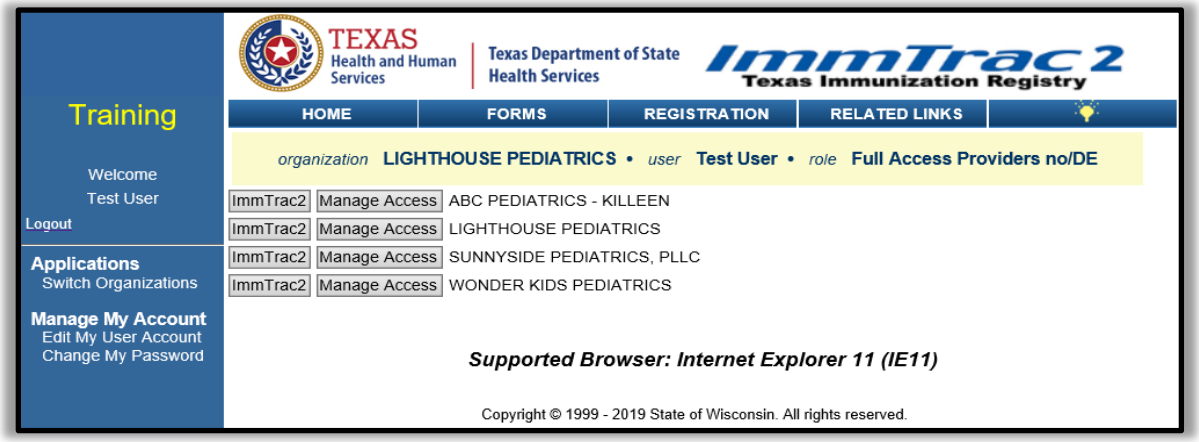


Figure 1 - User in Multiple Organizations

1B. How Do I Know If I Am Logged into the Correct Organization?

The yellow banner at the top of the screen (see *Figure 2 - Logged into Correct Organization)* displays the organization name that you are currently logged in under, the name of the user, and the user's role.

Figure 2 - Logged into Correct Organization

1C. How Can I Switch Between Organizations While Logged into ImmTrac2?

On the Manage Access screen, select "ImmTrac2" for the organization which you would like to add immunizations on behalf of. See *Figure 3 – Switch Between Organizations.*

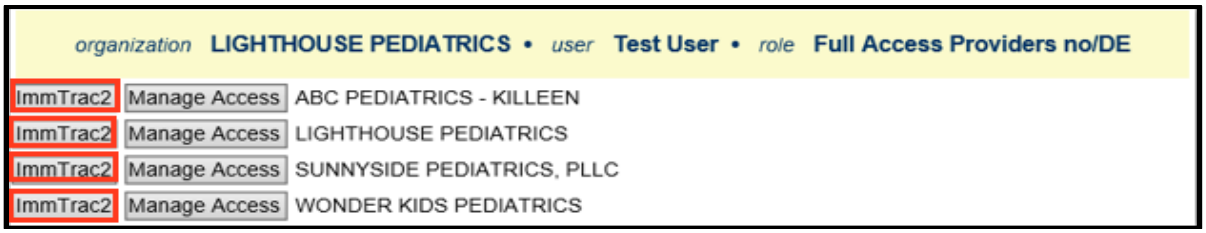


Figure 3 – Switch Between Organizations

2. Client Status Not Updated

Some reports generated from ImmTrac2 will only include clients that are listed as 'Active' with the organization (for example, the Reminder/Recall report). ***IMPORTANT*:** To ensure the accuracy of these reports, be sure to update the status of clients that are no longer associated to your practice.

2A. How Do Clients Become 'Active' with an Organization?

- Each new client added to ImmTrac2 is automatically 'Active' with that organization. This applies for clients added online as well as clients added through data exchange.
- When a historical or current immunization is added to a client's record. This includes updates that occur online as well as through data exchange.
- A client can also be manually flagged as 'Active' online on the 'Edit Client' screen under the Organization Information tab. See *Figure 4 – Active Status*.

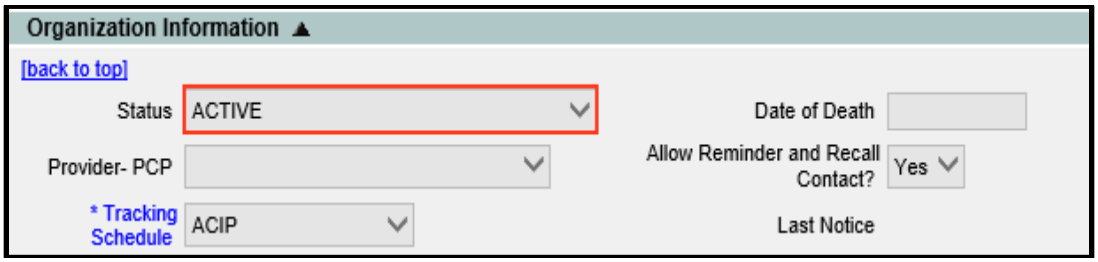


Figure 4 – Active Status

2B. How Do Clients Become 'Inactive' with an Organization?

- A client can be manually flagged as 'Inactive' online on the 'Edit Client' screen under the Organization Information tab. See *Figure 5 – Inactive Status*.

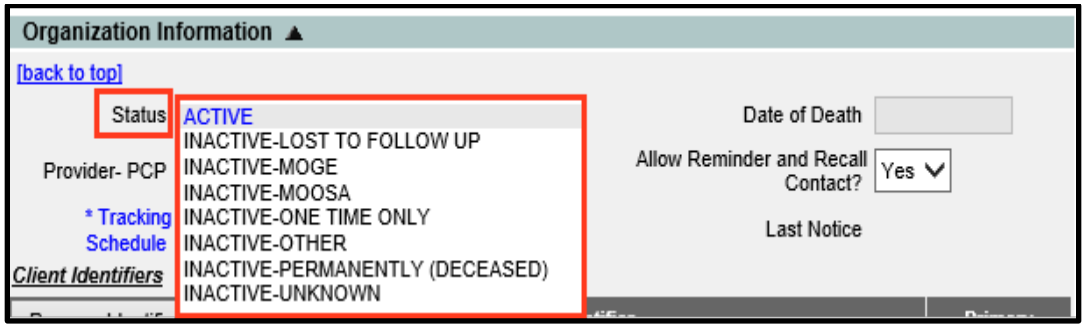


Figure 5 – Inactive Status

- Clients can also be flagged as 'Inactive' through data exchange. For additional information please feel free to contact your Electronic Health Records (EHR) vendor or the ImmTrac2 Interoperability Team toll free at 1-800-348-9158 or email ImmTracMU@dshs.texas.gov.

2C. Other considerations

- Only users associated to your organization can update the status of a client in ImmTrac2.
- Clients can be flagged as 'Active' for multiple ImmTrac2 organizations. Which means they may show up as 'Active' for multiple organizations.

3. No Consent on File

The most common reason why client records are rejected from ImmTrac2 is due to no consent on file. For immunization records to be stored in ImmTrac2, the parent, legal guardian, or managing conservator must complete an ImmTrac2 Minor Consent Form for their child. Adults must complete the ImmTrac2 Adult Consent form. These forms can be found online by going to www.immtrac.com and clicking on "Forms & Documents" at the bottom of the screen. See *Figure 6 – Forms and Documents*.

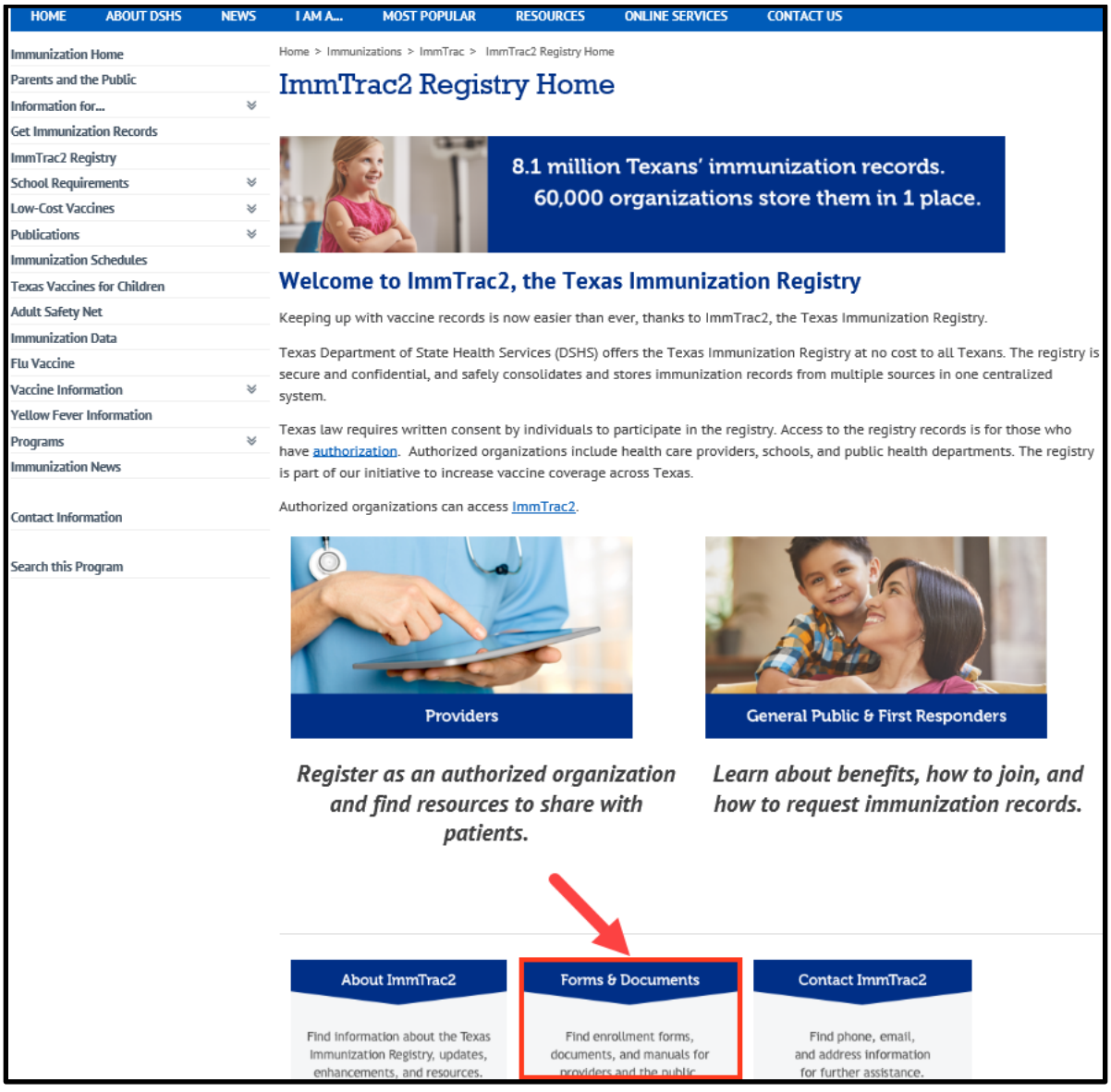
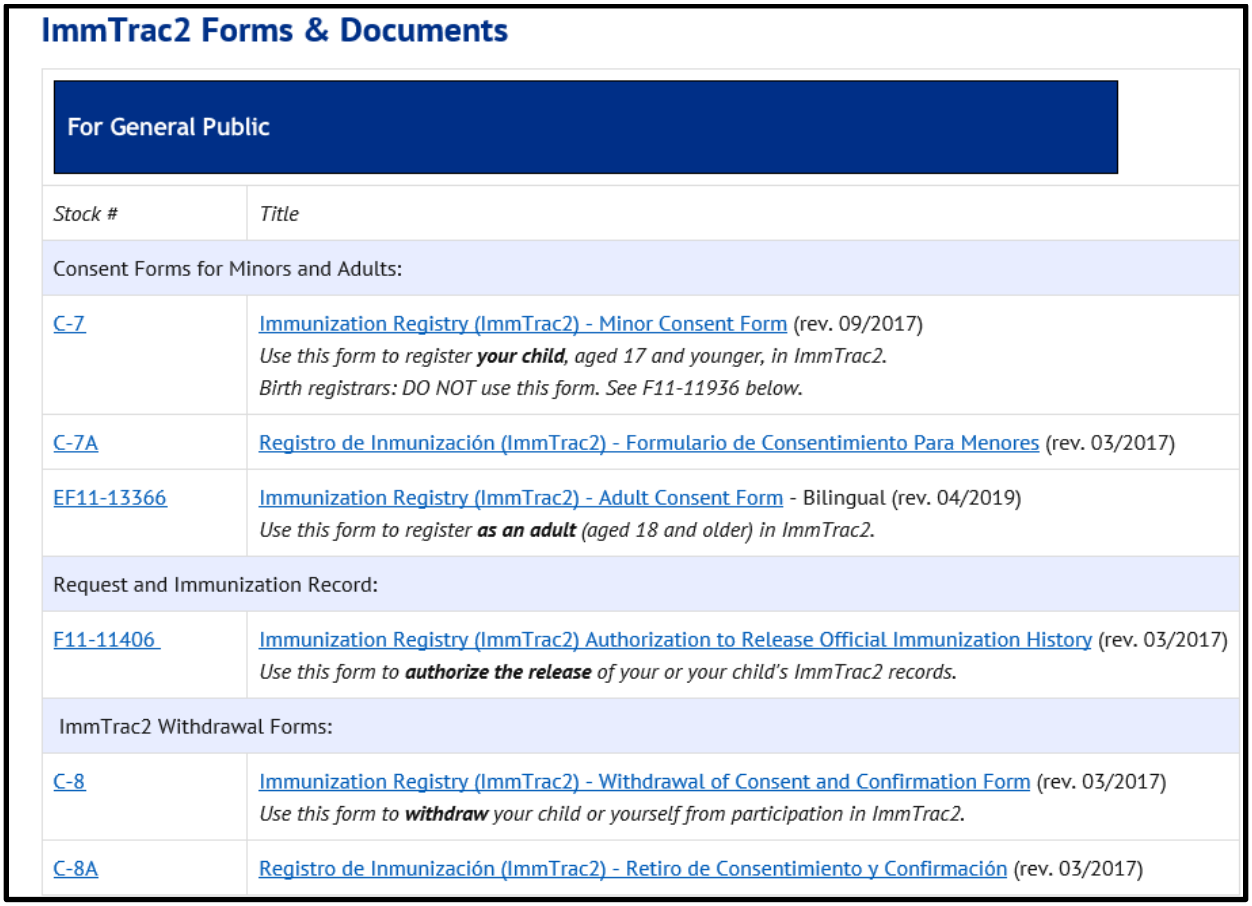


Figure 6 – Forms and Documents

When the Forms and Documents page comes up, scroll down to ImmTrac2 Forms & Documents and look for the ImmTrac form you want. See *Figure 7 – List of Forms*.



ImmTrac2 Forms & Documents

For General Public

Stock #	*Title*
Consent Forms for Minors and Adults:	
C-7	Immunization Registry (ImmTrac2) - Minor Consent Form (rev. 09/2017) *Use this form to register **your child**, aged 17 and younger, in ImmTrac2.* *Birth registrars: DO NOT use this form. See F11-11936 below.*
C-7A	Registro de Inmunización (ImmTrac2) - Formulario de Consentimiento Para Menores (rev. 03/2017)
EF11-13366	Immunization Registry (ImmTrac2) - Adult Consent Form - Bilingual (rev. 04/2019) *Use this form to register **as an adult** (aged 18 and older) in ImmTrac2.*
Request and Immunization Record:	
F11-11406	Immunization Registry (ImmTrac2) Authorization to Release Official Immunization History (rev. 03/2017) *Use this form to **authorize the release** of your or your child's ImmTrac2 records.*
ImmTrac2 Withdrawal Forms:	
C-8	Immunization Registry (ImmTrac2) - Withdrawal of Consent and Confirmation Form (rev. 03/2017) *Use this form to **withdraw** your child or yourself from participation in ImmTrac2.*
C-8A	Registro de Inmunización (ImmTrac2) - Retiro de Consentimiento y Confirmación (rev. 03/2017)

Figure 7 – List of Forms

After clicking on the form you want, depending on your browser a pop-up message may ask you if you want to open or save the form (see *Figure 8 – Message to Open or Save the Document*). You can then open and print the form.

Figure 8 – Message to Open or Save the Document

4. Incorrect Organizational Parent/Child Relationship

NOTE: This pertains only to organizations that exchange data electronically with ImmTrac2.

All client information and immunization data are submitted through the 'parent-site' on behalf of themselves and all sub-sites (child-sites) within a provider organization. See *Figure 9* – Parent-Child Hierarchy.

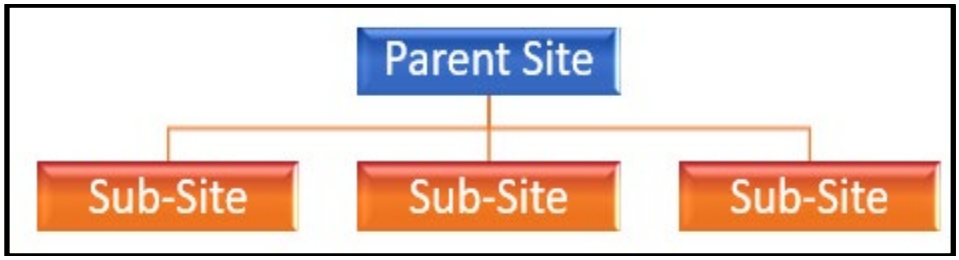


Figure 9 – Parent Child Hierarchy

If an organization is a stand-alone site, their data will transmit directly to the registry.

- If a sub-site (child-site) within a provider group is not correctly associated to the parent organization in ImmTrac2, their data will not be sent to ImmTrac2.
- It is also important for the parent-site to include which sub-site administered the vaccine within the data exchange file otherwise the parent-site will be documented as administering the vaccine.

NOTE: It is not uncommon for EHR systems to only list the parent-site as the submitter and as the administering provider. If reports generated in ImmTrac2 are not reflecting the correct administering provider, please contact your EHR vendor for support.

4A. How can I see the Parent/Child relationship in ImmTrac2?

1. Select 'registration/renewal' at the top of the screen (see *Figure 10 – Registration/Renewal Tab*).

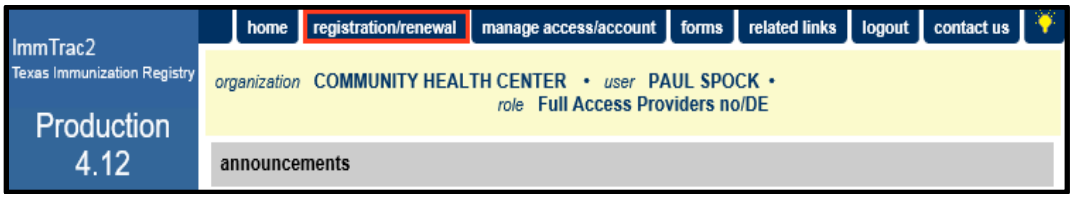


Figure 10 – Registration/Renewal Tab

2. Select 'Manage Renewals' hyperlink (see *Figure 11 – Manage Renewals link*).

Figure 11 – Manage Renewals link

4B. What Does a Child-Site View Look Like?

The example below is what it looks like from a sub-site, Org Code **MEMO0168**. The parent-site will appear on top and the child-sites below the parent. Child-sites will only be able to view their organization and their parent-site. See *Figure 12 – Child-Site View.*

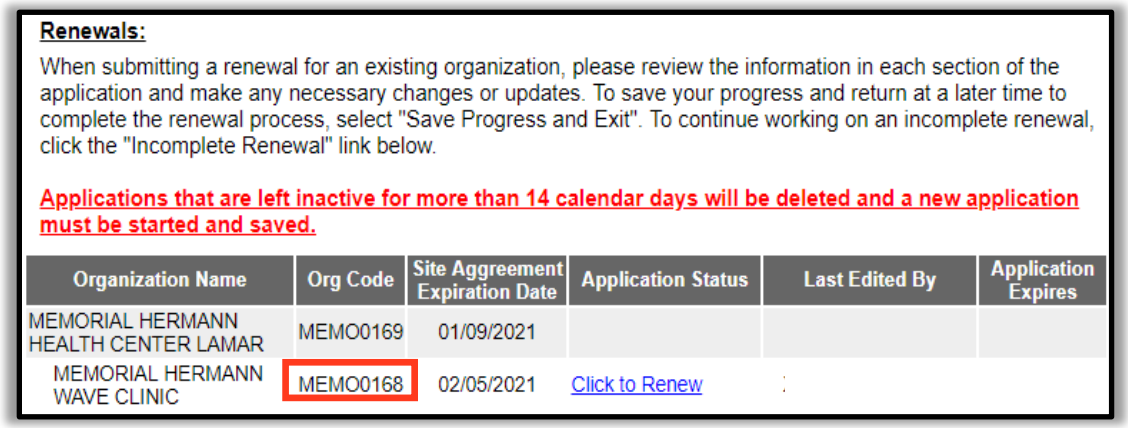


Figure 12 – Child-Site View

4C. What Does a Parent-Site View Look Like?

The example below is from a parent-site, Org Code **MEMO0169**. The parent-site will appear on top and the child-sites below the parent. Parent-sites will be able to view their organization as well as all child-sites below them. See *Figure 13 – Parent Site View*.

Renewals:

When submitting a renewal for an existing organization, please review the information in each section of the application and make any necessary changes or updates. To save your progress and return at a later time to complete the renewal process, select "Save Progress and Exit". To continue working on an incomplete renewal, click the "Incomplete Renewal" link below.

Applications that are left inactive for more than 14 calendar days will be deleted and a new application must be started and saved.

Organization Name	Org Code	Site Aggreement Expiration Date	Application Status	Last Edited By	Application Expires
MEMORIAL HERMANN HEALTH CENTER LAMAR	MEMO0169	01/09/2021	Click to Renew		
NEIGHBORHOOD HEALTH CENTER NE	NEIG0013	02/04/2019	Click to Renew		
MEMORIAL HERMANN ELROD SCHL BSD CL	MEMO0183	02/04/2019	Returned		
MEMORIAL HERMANN HOGG CLINIC - HOUSTON 1	MEMO0178	03/28/2019	Submitted for Approval		
NEIGHBORHOOD HEALTH CENTER - HOUSTON 1	NEIG0016	11/07/2019	Click to Renew		
MEMORIAL HERMANN TERRY CLINIC	MEMO0173	11/07/2019	Click to Renew		
MEMORIAL HERMANN HEALTH CENTERS FOR SCHOOLS- ALIEF CLINIC	MEMO0137	12/06/2019	Click to Renew		
MEMORIAL HERMANN BURBANK CLINIC	MEMO0179	06/04/2020	Click to Renew		
MEMORIAL HERMANN NIMITZ CLINIC	MEMO0174	10/26/2020	Click to Renew		
MMHC FOR SCL SHARPSTOWN CL	MMHC0001	01/14/2021	Click to Renew		
MEMORIAL HERMANN - KRUSE CLINIC	MEMO0185	01/25/2021	Click to Renew		
MEMORIAL HERMANN WAVE CLINIC	MEMO0168	02/05/2021	Click to Renew		

Figure 13 – Parent-Site View

5. Contact Information

For more information and support with data exchange, contact the Texas Immunization Registry Interoperability Team.

Email: ImmTracMU@dshs.texas.gov
Phone: (800) 348-9158, press Option 3

Guide to the Reminder/Recall Report

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Summary

The Reminder/Recall Report generates client notices, which include letters, cards, mailing labels, and client listings. Reminder and recall notices can be generated for each client if the following conditions in the client record are met:

- The client status is “Active” in the Client Information section for your organization.
- The “Allow Reminder and Recall Contact?” indicator in the Client Information section is “Yes.”
- The client has complete address information listed in the Address Information section.

Generate Reminder/Recall Report Steps 1-2

See *Figure 1: Generate Reminder/Recall Report Steps 1-2*.

To generate the Reminder/Recall Report, follow the steps below.

1. Click the **Generate Report** option from the menu panel.
2. Select the **Reminder/Recall Report.**

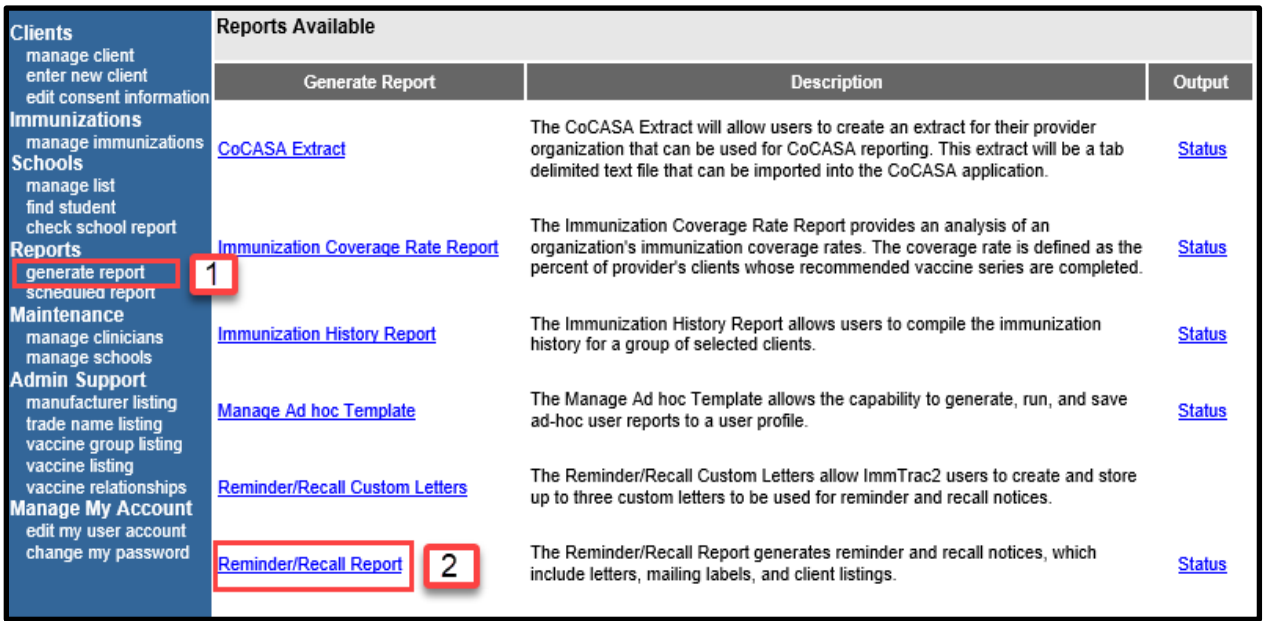


Figure 1: Generate Reminder/Recall Report Steps 1-2

Generate Reminder/Recall Report Steps 3-6

See *Figure 2: Generate Reminder/Recall Report Steps 3-6*.

3. **Set the Request Criteria**: The Create New List Section gives users the option of selecting saved reminder recall request criteria or creating a new reminder recall request.
   - **Enter new Reminder Recall Request Criteria:** Selecting the radio button and supplying a list name will generate a new reminder recall request report that can be generated as a report or saved as a template and later generated as a report.
   - **Use a previous Reminder Recall Request Criteria:** Selecting the "Use a previous Reminder Recall Request Criteria" radio button and selecting a list name displays that template's criteria. Once the criteria displays, users can edit the criteria from the previous list before generating the report.
4. **Indicate the Tracking Schedule:** Choose which set of recommended immunizations and corresponding dates will be compared to each client's immunization history.

5. **Select the Vaccine Group to Report on:** Choose which vaccines will be included in the report by selecting a vaccine and clicking the Add button. Also select which vaccines to include, vaccines that are Due Now, Past Due, or Both.
6. **Selecting Subpotent Recall**: This filter will show the clients with Sub-potent vaccinations recorded.

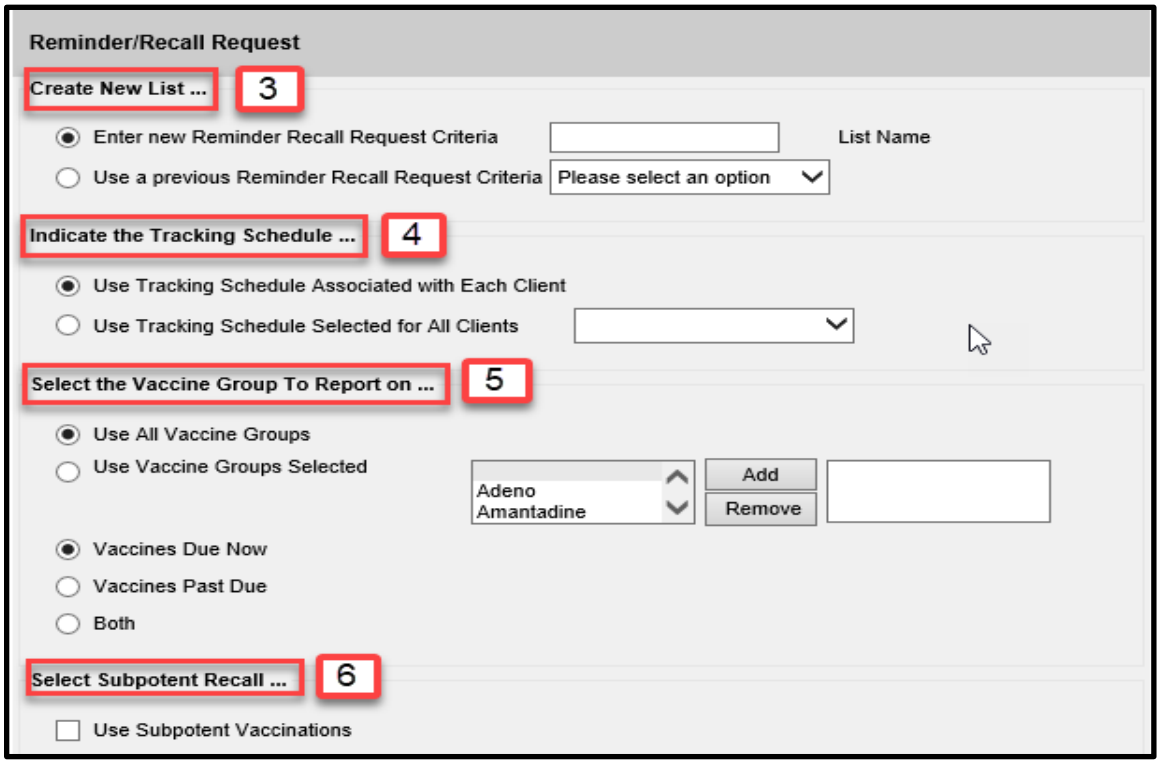


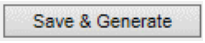
Figure 2: Generate Reminder/Recall Report Steps 3-6

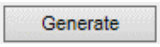
Generate Reminder/Recall Report Steps 7-12

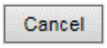
See *Figure 3: Generate Reminder/Recall Report Steps 7-12*.

7. **Selecting a School or Primary Care Provider**: This filters the clients who have been assigned to the selected school or physician.
8. **Enter Additional Demographic Information**: Entering and/or selecting these options allows filtering of clients whose records match specific demographic information.
9. **Enter the Date criteria**: Select a Date Range to filter clients.
    - Target Date – Entering a target date range will return clients who are due now, are past due, or will be due for the selected vaccine within the specified date range.

- Birth Date - Entering a birth date range will return clients who have a birth date that falls between the dates entered.
- Age Range - Entering an age range will return clients whose age falls between the dates entered.

10. **Select Vaccine Groups to Display**: Selecting Vaccine Groups to display will filter for the vaccine groups that display on the report as being recommended. By default, all vaccine groups that are due now or past due display on the report.
11. **Specify How to Sort the Report Data**: Allows a choice of sorting options. The default is last name in ascending order, then first name in ascending order.
12. Click the **Save & Generate** 

button to save the request criteria and to generate the report.
    - If previous Reminder Recall Request Criteria was selected, this will save any changes made to template.
    - Click the **Generate** 

button to generate the report and not save as a template or save changes to the criteria list.
    - Click the **Cancel** 

button to return to the Generate Reports screen.

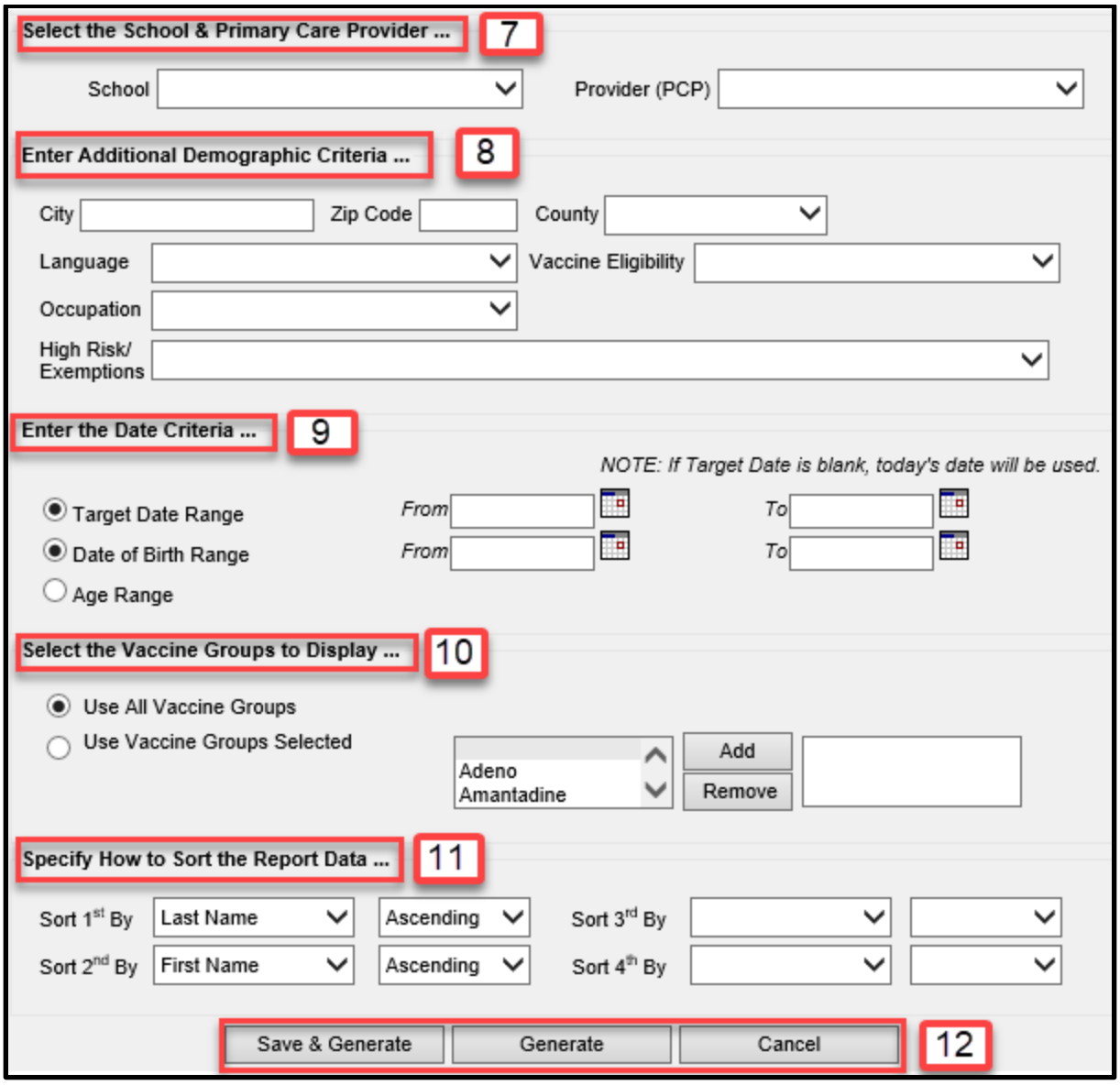


Figure 3: Generate Reminder/Recall Reports Steps 7-12

Reminder Request Status Screen

See *Figure 4: Status Screen*.

Once the reports are generated the **Reminder Request Status** screen displays. This screen will only retain one report at a time, and as new reports are generated the previous report will no longer be accessible. The status indicates the percentage of completion for the report. Periodically click on **Refresh** to update the completion percentage information. The time it will take for the report to generate will depend upon the number of clients associated with the provider organization.

This screen will also display all the reminder output options that were generated for the specific report.

1. When redirected to the Reminder Request Status screen, click the Refresh button until the status is 100%.
2. When the report is ready, click on the blue hyperlink to go to the Reminder Request Process Summary screen.

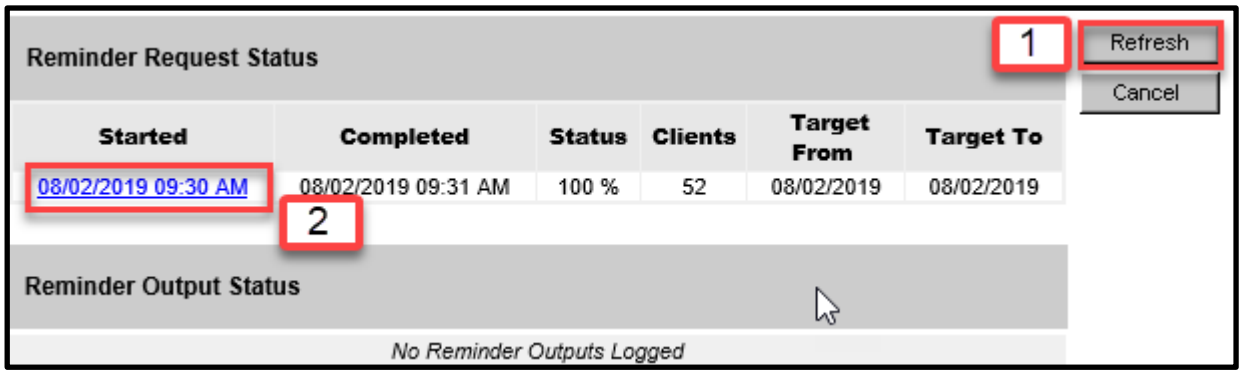


Figure 4: Status Screen

***Note**: The report will run in the background similar to other reports, allowing users to exit ImmTrac2 or work on other ImmTrac2 tasks until it completes. To go to the Reminder Request Status screen, click on "generate report" on the menu panel and click the "Status" link next to the Reminder/Recall Report link.*

Reminder Request Process Summary Screen

The Summary screen is broken up into three sections: Reminder Request Criteria, Reminder Request Output Options, and Last Notice Date Options. From the Summary screen, users can create various reminder output options.

Reminder Request Criteria: This section lists the number of clients involved in the search and the criteria used to define the search. The *Total Number of Clients Eligible for Reminder* at the bottom of the screen is dependent upon the search criteria and is narrowed down by each criteria step. See *Figure 5: Reminder Request Criteria*.

Reminder Request Process Summary

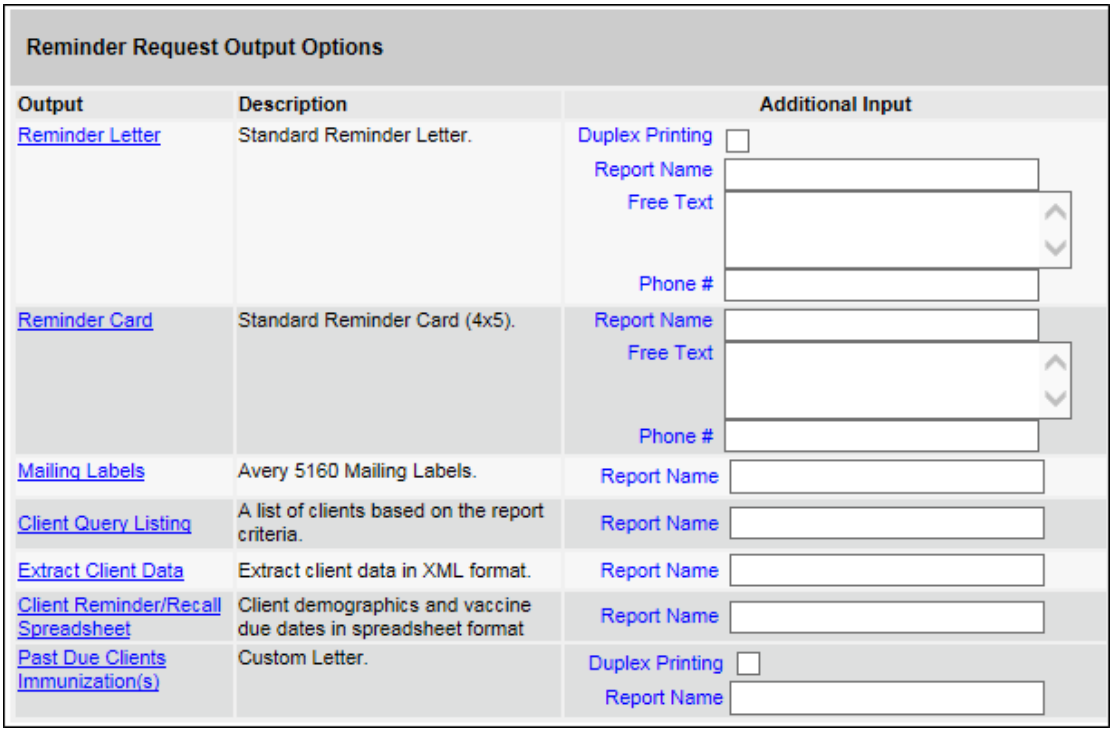
Reminder Request Criteria

Step	Criteria Evaluated at this Step	Clients
1	Clients **associated** with *COMMUNITY HEALTH CENTER*	2302
2	Clients **immunized** by *COMMUNITY HEALTH CENTER*	2301
3	Clients that are **active** within *COMMUNITY HEALTH CENTER CLINIC* and **allow Reminder & Recall Contact**. Additional criteria includes: • **Client Age Range** 17 Year to 18 Year; • **School** is not specified; • **Provider** is not specified;.	52
4	Clients that have a **Valid Address**. Additional criteria includes: • **City** is not specified; • **Zip Code** is not specified.	52
5	Clients that meet the following criteria regarding vaccination status: • Clients that are **Due Now or Past Due** for one or more vaccinations **as of 08/02/2019**; • Use all **vaccine groups**; • Use **tracking schedule** associated with each client.	52
	Total Number of Clients Eligible for Reminder	**52**

Figure 5: Reminder Request Criteria

Reminder Request Output Options: This section lists the various reminder output options available, including both standard outputs and custom outputs. See below and see also *Figure 6: Reminder Request Output Options*.

- **Output** – This column displays the types of reports that can be produced. These reports are described in detail in the table below. **Clicking the Hyperlink in the Output column will generate the report that was selected**.
- **Description** - This column provides a brief description of the output option.
- **Additional Input -** This column displays options for including additional information on the output report and defining a report:
  - **Report Name:** Enter the Name to describe the output report.
  - **Free text:** Enter in text that will appear on the report.
  - **Phone#:** Enter in the phone number that will appear on the output report.



Reminder Request Output Options

Output	Description	Additional Input
Reminder Letter	Standard Reminder Letter.	Duplex Printing ☐ Report Name Free Text Phone #
Reminder Card	Standard Reminder Card (4x5).	Report Name Free Text Phone #
Mailing Labels	Avery 5160 Mailing Labels.	Report Name
Client Query Listing	A list of clients based on the report criteria.	Report Name
Extract Client Data	Extract client data in XML format.	Report Name
Client Reminder/Recall Spreadsheet	Client demographics and vaccine due dates in spreadsheet format	Report Name
Past Due Clients Immunization(s)	Custom Letter.	Duplex Printing ☐ Report Name

Figure 6: Reminder Request Output Options

Reminder Letter

The letter output option allows users to generate a standard form letter to the parent/guardian for each client returned on the query. The letter allows room at the top for the organization's letterhead. The body of the letter includes the client's immunization history, recommended immunizations, and due dates. There are up to two lines for free text and/or a telephone number.

To generate Reminder Letter, follow the steps below (see *Figure 7: Generate Reminder Letter Steps 1-2)*:

1. Under the *Additional Input* column, there are options to enter the following:
    - **Duplex printing** – printing on both sides.
    - **Report Name** - if a Report Name is not indicated, the report will simply be named Reminder Letter on the Reminder Report Status screen with the date it was generated. Enter up to 20 characters in this field.
    - **Free Text** - include a maximum of 400 characters in this field. This information will be displayed as the closing for each letter.
    - **Phone** - the telephone number is presented in the closing for each letter.
2. Click the **Reminder Letter** hyperlink.

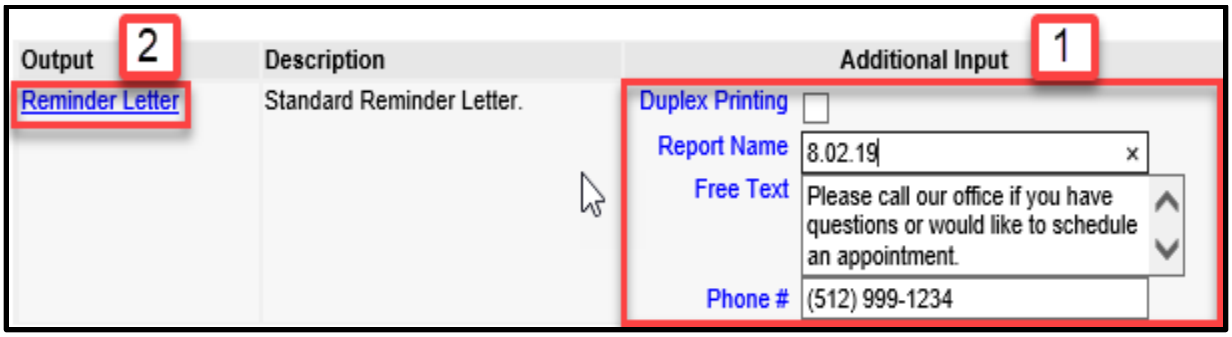


Figure 7: Generate Reminder Letter Steps 1-2

3. Users are redirected back to the Reminder Request and Output Status screen. If needed, click the **Refresh** Refresh button until the status is "Ready." See *Figure 8: Generate Reminder Letter Steps 3 and 4.*

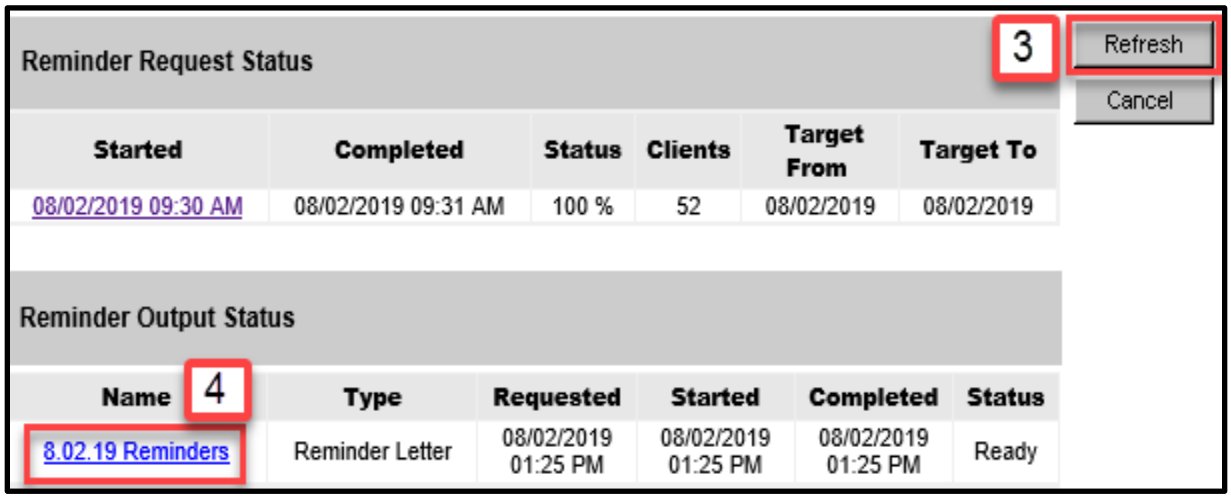


Figure 8: Generate Reminder Letter Steps 3-4

4. The Reminder Letter will be listed at the top of the Output Status section as an active hyperlink available in both English and Spanish.
    - For clients who have selected Spanish as their "Language Spoken" option in the Client Information tab of their client's record, the Reminder Letter will be output in Spanish.
    - Click on the Reminder Letter hyperlink to view or print the letters in a PDF file. See *Figure 9: Reminder Letter Example*.

Dear Parent/Guardian of Johnny B Goode,

Our records indicate that Johnny B Goode has received the following immunizations:

Immunization Record		Tracking Schedule:	ACIP
Vaccine Group	Date Administered	Series	Vaccine
HepA	09/06/2018	1 of 2	HepA-Ped 2 Dose
HepB	11/28/2001	1 of 3	HepB-Peds
HPV	10/20/2016	1 of 2	HPV9
	09/06/2018	2 of 2	HPV9
Meningo	09/06/2018	1 of 1	MCV4P
Varicella	09/06/2018	1 of 2	Varicella

Our records also show that Johnny B Goode may be due for the following immunizations. If Johnny received these or other immunizations from another health care provider, please call our office so that we can update Johnny's record. Otherwise please take Johnny to a health care provider to receive them.

Immunizations Due
Flu NOS
HepA, NOS
HepB, NOS
MMR
Polio, NOS
Tdap
Varicella

Please call our office if you have questions or would like to schedule an appointment.

The number for our office is: (512) 999-1234

Figure 9: Reminder Letter Example

Reminder Card

The Reminder Card output option allows users to generate a standard reminder card for the parent/guardian for each client returned on the query. The card allows room at the top for a greeting. The body of the card includes the client's recommended immunizations and due dates. There are up to two lines for free text and/or a telephone number.

To generate Reminder Cards, follow the steps below (see *Figure 10: Generate Reminder Card Steps 1-2* and *Figure 11: Generate Reminder Card Steps 3-4*).

1. Under the *Additional Input* column, users have the option of entering:
    a. **Report Name** - If a Report Name is not indicated, the report will simply be named "Reminder Card" on the Reminder Report Status screen with the date it was generated. Enter up to 20 characters in this field.

b. **Free Text** - Includes a maximum of 400 characters in this field. This information will be displayed as the closing for each card.

c. **Phone** - The telephone number is presented in the closing for each of the card.

2. Click the **Reminder Letter** hyperlink.

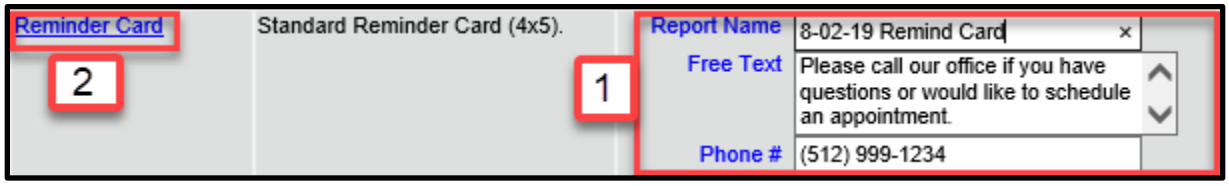


Figure 10: Generate Reminder Card Steps 1-2

3. Users are redirected back to the Reminder Request and Output Status screen, and if needed click the Refresh button until the status is "Ready."

4. The Reminder Card will be listed at the top of the Output Status section as an active hyperlink available in both English and Spanish. Click on the Reminder Card hyperlink to view or print the letters in a PDF file. See *Figure 12: Generate Reminder Card Example*.

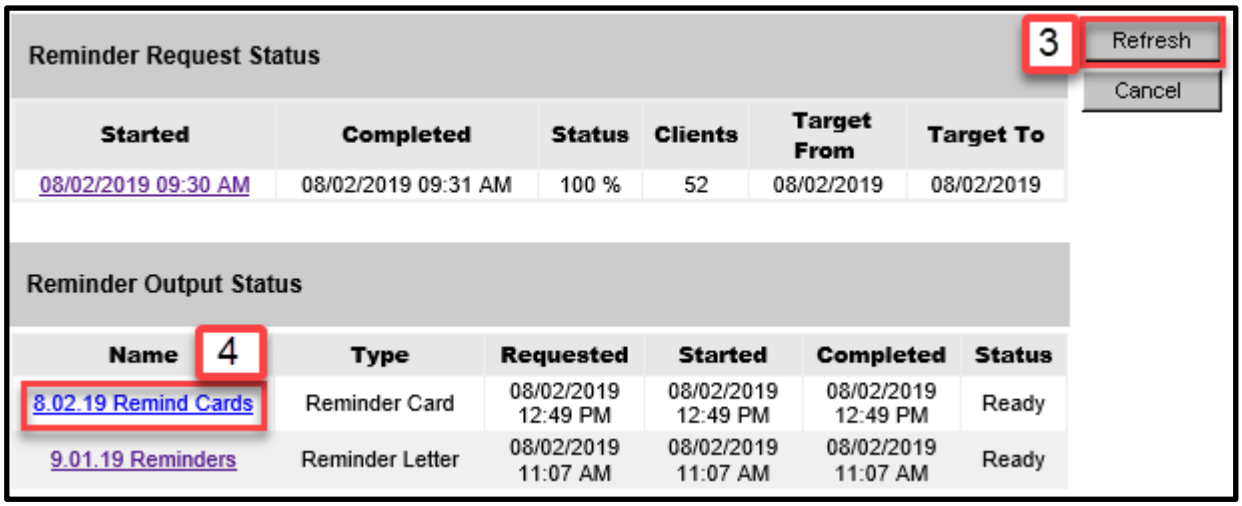


Figure 11: Generate Reminder Card Steps 3-4

Dear Parent of Johnny B Goode

Our records show that Johnny B Goode may be due for the following immunizations. If Johnny received these or other immunizations from another health care provider, please call our office so that we can update Johnny's record. Otherwise please schedule an appointment for Johnny to receive them.

Vaccine Group	Date Needed
Influenza-seasnl	07/01/2019

The number for our office is: (512) 999-1234
Please call our office if you have questions or would like to schedule an appointment.

Figure 12: Generate Reminder Card Example

Mailing Labels

The labels output option produces 30 labels per screen on Avery Mailing Labels #5160. See *Figure 13: Generate Reminder Mailing Labels Example*.

To the Parent/Guardian of: ANCE MARLIN BOB 234 MULBERRY LANE AUSTIN TX 78749	To the Parent/Guardian of: LANI BOB 123 MULBERRY LANE AUSTIN TX 78723	To the Parent/Guardian of: LARRY BOB 123 MULBERRY DRIVE AUSTIN TX 78749

Figure 13: Generate Reminder Mailing Labels Example

Client Query Listing

The Client Query Listing displays contact information for those clients identified as being due/overdue in the Reminder/Recall output in a report format. This report lists every client that was returned in the report query process. See *Figure 14: Client Query Listing Example*.

Report run on : 08/02/2019 **Client Query Listing** Page 1 of 1

Client Name (FML)	Phone Number	Address	City/State/ZIP
JOHNNY B GOODE – 08/02/2002	(512) 123-4567	9934 PRIVATE ROAD	ANYTOWN, TX 76999-

Tracking Schedule: ACIP

Vaccine	Immunizations Due	Immunization Dates
DTP/aP	Complete	1) 08/08/2002 2) 09/17/2002 3) 08/12/2003 4)
HepA	Complete	1) 02/13/2006 2) 09/09/2014
HepB	Complete	1) 02/05/2002 2) 03/05/2002 3) 09/17/2002
Hib	Complete	1) 08/08/2002 2) 09/17/2002 3) 08/12/2003 4)
HPV	Complete	1) 09/09/2014 2) 01/30/2017
Influenza-seasnl	07/01/2019	1) 11/23/2010 2) 11/03/2017
Meningo	Complete	1) 08/13/2014 2) 06/04/2018
Meningococcal B	Complete	1) 06/04/2018 2) 07/12/2018
MMR	Complete	1) 08/12/2003 2) 02/13/2006
PneumoConjugate	Complete	1) 08/08/2002 2) 08/12/2003 3) 02/10/2004
Polio	Complete	1) 08/08/2002 2) 09/17/2002 3) 08/12/2003 4)
Td/Tdap	08/13/2024	1) 08/13/2014
Varicella	Complete	1) 02/10/2004 2) 02/13/2006 3) 08/13/2014

Figure 14: Client Query Listing Example

Extract Client Data

The Client Extract Data displays in an XML format and contains every client and their demographic information that was returned in the report query process.

Client Reminder/Recall Spreadsheet

The Client Extract Data displays client demographic information, immunization history, and recommendations for those clients identified as being due/overdue in the Reminder/Recall output in an Excel spreadsheet. This report lists every client that was returned in the report query process. See *Figure 15: Reminder/Recall Spreadsheet Example*.

Client Reminder/Recall Spreadsheet
Filters:
Type Clients that are **Due Now or Past Due** for one or more vaccinations **as of 04/27/2016**
To and From 04/27/2016 to 04/27/2016
Birthdate range is not specified
TXIIS 1111141000
Organization Name: Training
TVFC PIN: null

Client First Name	Client Last Name	Client Date of Birth	Parent/Guardian First Name	Parent/Guardian Last Name	Client Address 1	Client Address 2	Client City
ANCE	BOB	2015-10-05			234 MULBERRY		AUSTIN
LANI	BOB	2015-10-05			123 MULBERRY		AUSTIN
LARRY	BOB	2015-10-05			123 MULBERRY		AUSTIN
MARY	BOB	2015-10-05			123 MULBERRY		AUSTIN
SALLY	BOB	2015-10-05			456 MULBERRY		AUSTIN
TERRY	BOB	2015-10-05			123 MULBERRY		AUSTIN
TYLER	BOB	2015-10-05			123 MULBERRY		AUSTIN
BONNIE	CLYDE	2015-10-05	BOBBIE	MAGEE	123 MULBERRY		ELGIN
MAVIS	STAPLES	1939-07-10	OCEOLA	STAPLES	1100 W. 49TH ST		AUSTIN
AMANDA	SUE	2016-02-14			123 DECKER LN.		AUSTIN
MAX	SUE	2016-02-14			123 SHOWPLACE		AUSTIN
MYRTLE	TURTLE	2015-10-05			123 MULBERRY	34456	SIMCITY

Figure 15: Reminder/Recall Spreadsheet Example

To generate the Mailing Labels, Client Query Listing, Extract Client Data, and Client Reminder/Recall Spreadsheet, follow the steps below. See *Figure 16: Generate Reminder Output Options Step 1-2*.

***Note**: The reminder output options are generated one at a time.*

1. Under the Additional Input column of the table enter a **Report Name** - if a Report Name is not indicated, the report will simply be named “Mailing Labels” or “Client List”, or “Client XML”, or “Client Reminder/Recall Spreadsheet” on the Reminder Report Status screen with the date and time it was generated. Enter up to 20 characters in each file name field.
2. Click the appropriate Output hyperlink: “Mailing Labels”, “Client Query Listing”, “Extract Client Data”, or “Client Reminder/Recall Spreadsheet”.

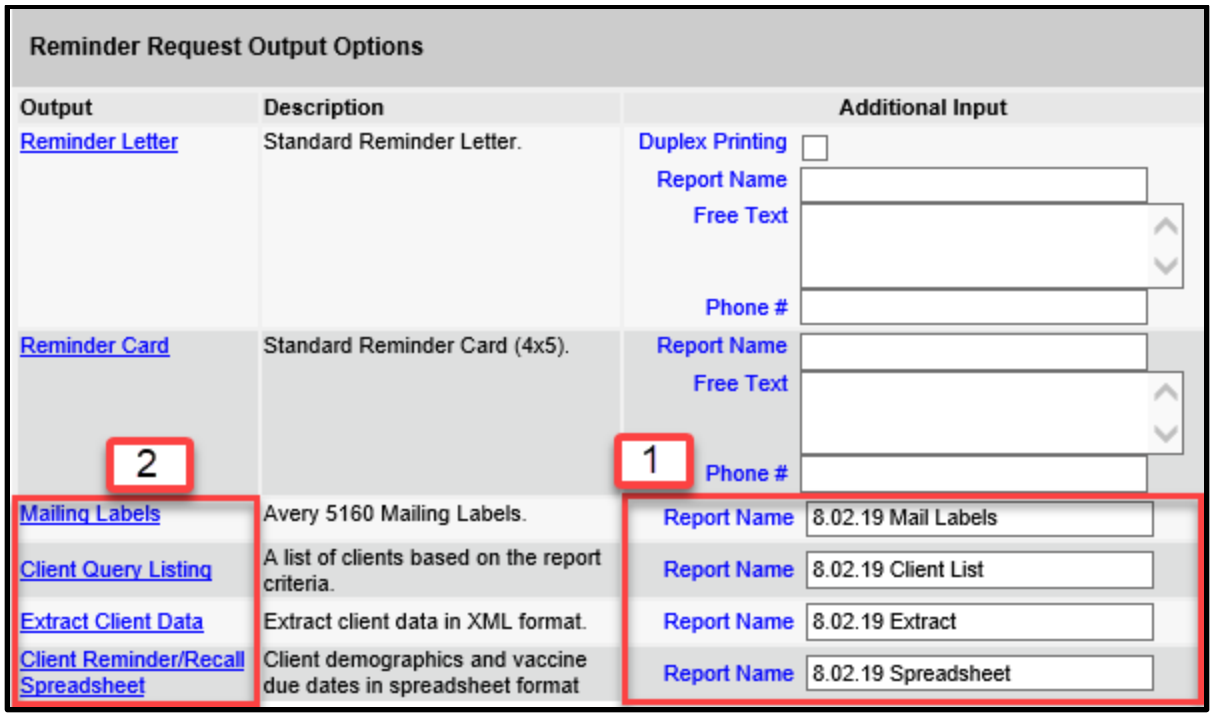


Figure 16: Generate Reminder Output Options Step 1-2

3. You will be redirected back to the Reminder Request Status and Output Status screen (See *Figure 17: Generate Reminder Output Options Step 3-4)*. Click the Refresh button until the status is "Ready."
4. Each reminder output will be listed in the Output Status section as an active hyperlink - click on the applicable option to open the output file.

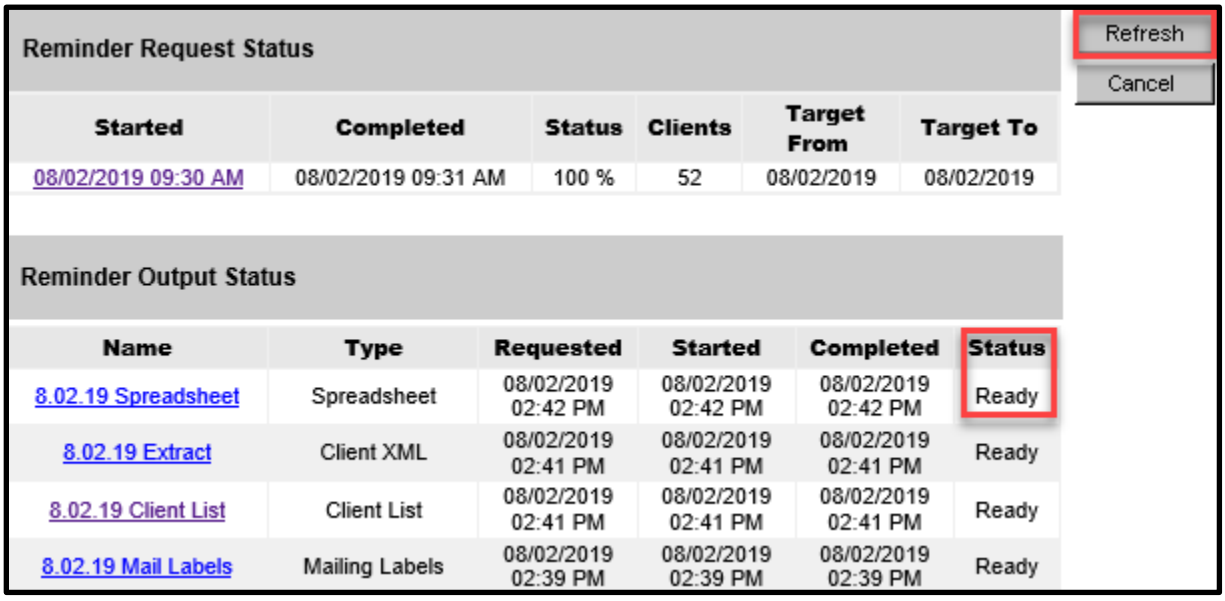


Figure 17: Generate Reminder Output Options Step 3-4

Last Notice Date Options

The Reminder Request Process Summary screen allows users to reset the last notice date, which will affect future reminder/recall notices generated using this information. See *Figure 18: Reminder/Recall Last Notice Date Options*.

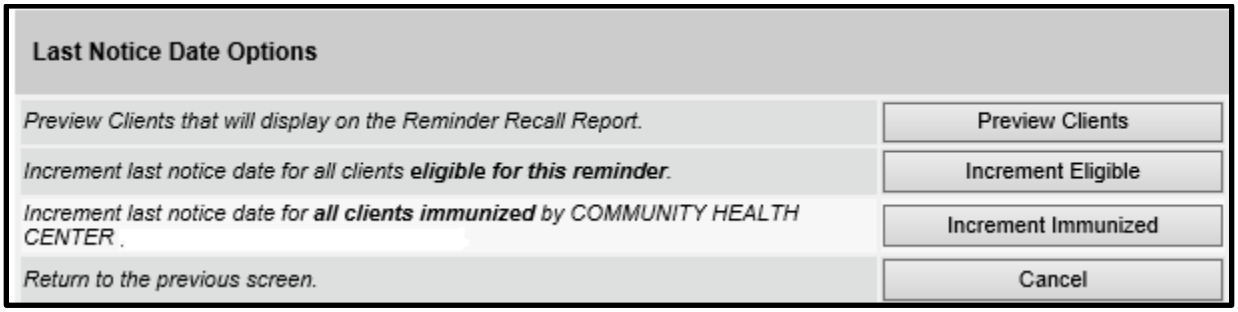


Figure 18: Reminder/Recall Last Notice Date Options

Preview Clients: view a list of clients included in the Reminder Recall Report. This information includes a hyperlink to each client's demographic record. This is the same screen that display if the Check Reminder List is selected from the *Generate Report* menu option.

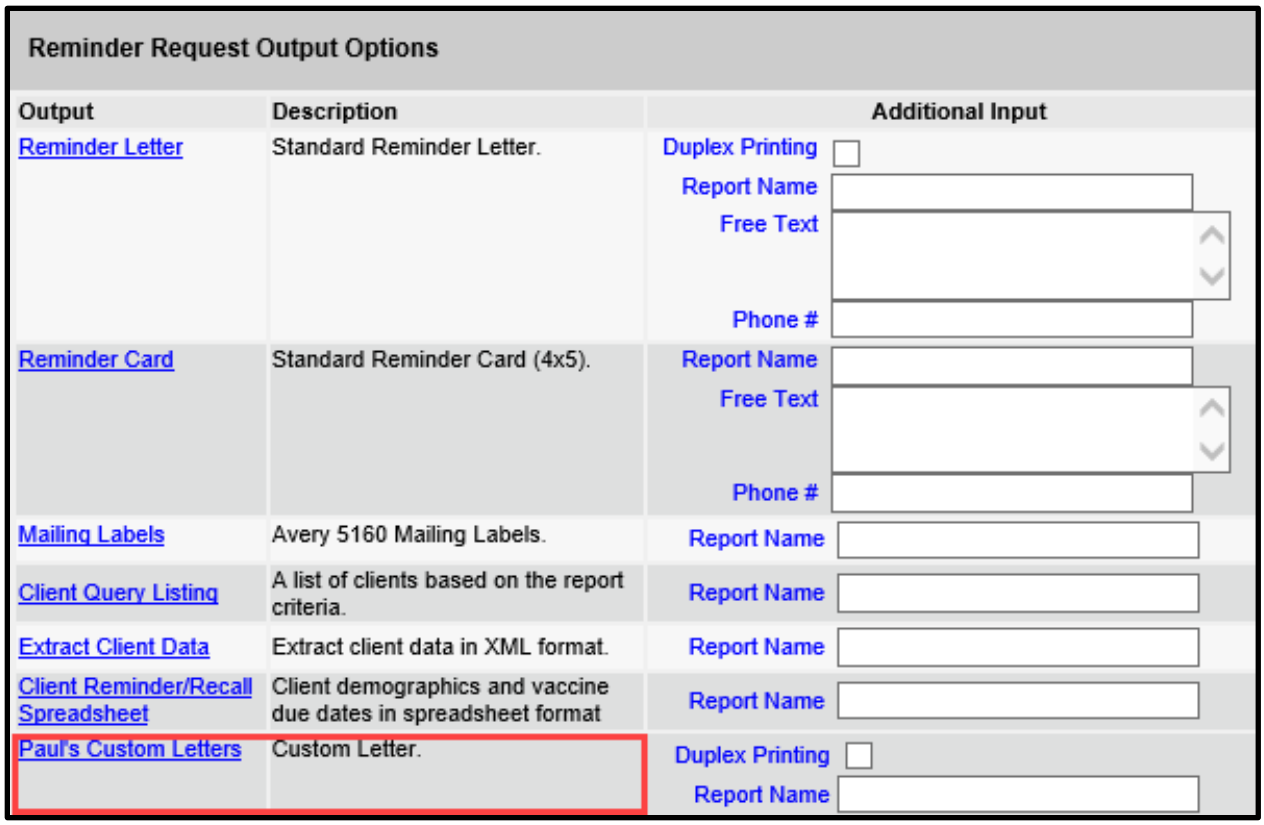
Increment Eligible: used to reset the last notice date for all clients eligible for this reminder. The last notice date is viewable on the client's demographic record under the organization information section.

Increment Immunized: used to increment the last notice date for all clients immunized by your organization.

Cancel: to return to the Reminder Request Status screen.

Custom Letter

In addition to the standard letter, ImmTrac2 allows users to create and store up to three custom letters to be used for reminders and recalls. Once a custom letter is created it is available for selection on the Reminder Request Output Option screen for the Reminder Report. See *Figure 19: Reminder Request Output Options*.



Reminder Request Output Options

Output	Description	Additional Input
Reminder Letter	Standard Reminder Letter.	Duplex Printing ☐ Report Name Free Text Phone #
Reminder Card	Standard Reminder Card (4x5).	Report Name Free Text Phone #
Mailing Labels	Avery 5160 Mailing Labels.	Report Name
Client Query Listing	A list of clients based on the report criteria.	Report Name
Extract Client Data	Extract client data in XML format.	Report Name
Client Reminder/Recall Spreadsheet	Client demographics and vaccine due dates in spreadsheet format	Report Name
Paul's Custom Letters	Custom Letter.	Duplex Printing ☐ Report Name

Figure 19: Reminder Request Output Options

Create a New Reminder/Recall Custom Letter

NOTE: One advantage of the Reminder/Recall Custom Letter is that you can choose to not include the client's immunization history in the letter if you do not want to include it. To create Reminder/Recall Custom Letters, follow the steps below. See *Figure 20: Generate Reminder/Recall Custom Letters Steps 1-2.*

1. Click the **Generate Report** option from the menu panel.
2. Select **Reminder/Recall Custom Letters**.

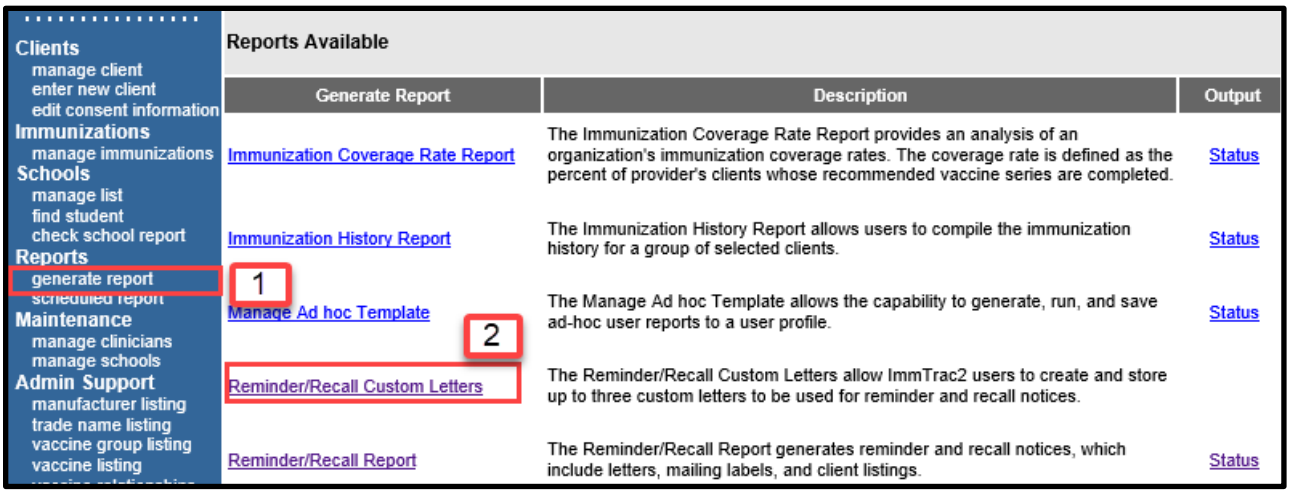


Figure 20: Generate Reminder/Recall Custom Letters Steps 1-2

3. On the Reminder/Recall Customer Letter screen, click the New Customer Letter link to begin creating the custom letter. See *Figure 21: Reminder/Recall Custom Letters Step 3*.

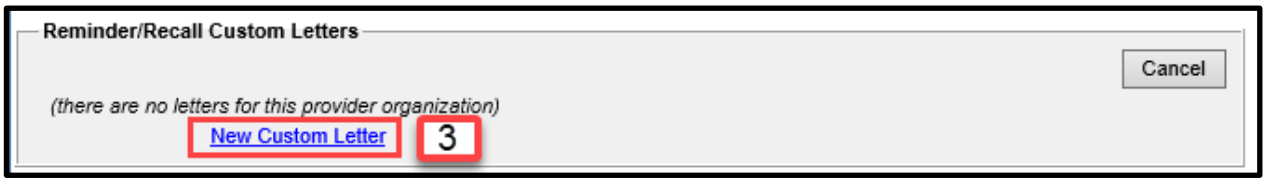


Figure 21: Generate Reminder/Recall Custom Letters Step 3

4. Fill out the template using *Figure 22: Reminder/Recall Custom Letters Step 4* and also see the Reminder/Recall Custom Letters Options to help complete the customized template.

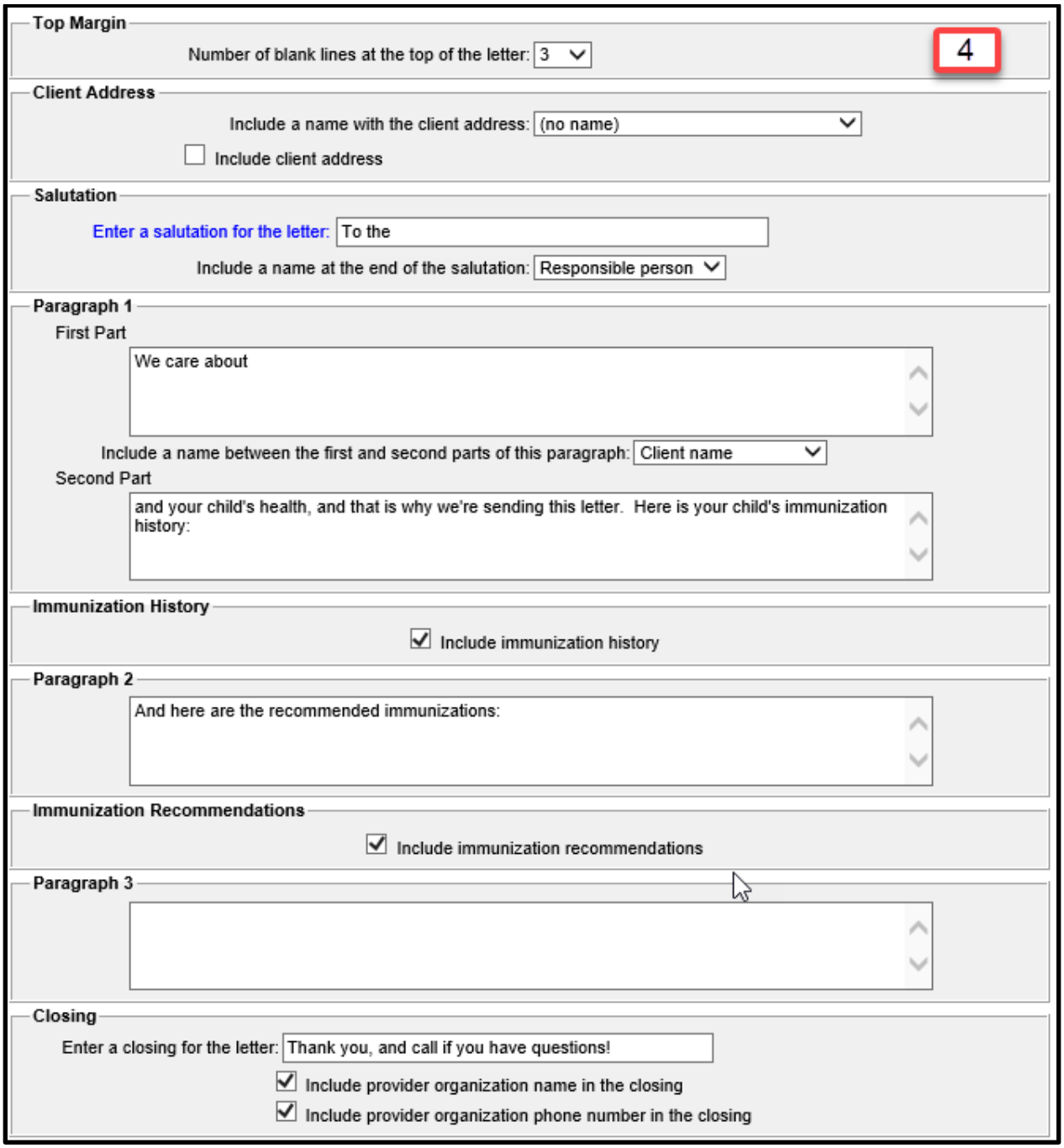


Figure 22: Reminder/Recall Custom Letters Data Step 4

Reminder/Recall Custom Letter options:

- **Top Margin**. From the drop-down list provided, choose the number of blank lines at the top of the letter. **These blank spaces will leave room for your office letterhead.** This field will default to 3.
- **Client Address**. Check the box to include the client's address at the top of the letter.
- **Salutation**. Enter a greeting in the text box to begin the letter. For example, "Dear" or "Greetings." Use the drop-down arrow to determine if you want to **Include a name at the end of the salutation**. If "Name" is selected, the name of the client will show up after the salutation. If "Responsible Person" is chosen, the letter will read <salutation> Parent/Guardian of <client name>. For example, "Dean Parent/Guardian of Peggy Sue."
- **Paragraph 1 First Part**. Enter desired text. Enter up to 4,000 characters of text in this field.
- **Paragraph 1 Name Option**. Include a name between the first and second part of this paragraph: Choose the name to appear within the paragraph from the drop-down list. Select either parent/guardian, client name or no name.
- **Paragraph 1 Second Part**. If you chose to enter a name, add the remaining text for the first paragraph in this field.
- **Immunization History Option**. Check the box to include the client's immunization history in the letter. **If you do not want to include the client's immunization history in this letter, do not check the box "Include immunization history".**
- **Paragraph 2**. Enter desired text. Enter up to 4,000 characters of text in this field.
- **Immunizations Recommended Option**. Check this box to include the immunization needed forecast for the client in the letter.
- **Paragraph 3**. Enter desired text. Enter up to 4,000 characters of text in this field.
- **Closing**. Enter a closing word or statement for the letter in this field. You have the option of checking a box to include the name of the provider organization in the closing, and another option of checking a box to include the phone number of the organization in the closing.

5. Enter the Customer Letter Name, and then Click the **Save** Save button. See *Figure 23: Reminder/Recall Custom Letters Data Step 5*.
    - The screen will refresh, but no message displays.
    - Click the Cancel Cancel button to return to the previous Reminder/Recall Customer Letters screen as seen in step 3, where the newly created letter displays as a hyperlink.

Figure 23: Reminder/Recall Custom Letters Data Step 5

Edit a Reminder/Recall Custom Letter

To edit an existing Reminder/Recall Customer Letter, follow the steps below.

See *Figure 24: Edit Reminder/Recall Custom Letters Step 1.*

1. Once you have navigated to the Reminder/Recall Custom Letter screen, click the customer letter link**.**

Figure 24: Edit Reminder/Recall Custom Letters Step 1

2. Update the customer letter data or letter name as needed, and then click the Save [Save] button**.** See *Figure 24: Reminder/Recall Custom Letters Data Table* for details on each data field.
   - The screen will refresh, but no message displays. *(Not Shown)*
   - Click the Cancel [Cancel] button to return to the previous Reminder/Recall Customer Letters screen as seen in step 3. If the letter name was updated, the new name displays.

Delete a Reminder/Recall Custom Letter

To delete an existing Reminder/Recall Customer Letters, follow the steps below.

See *Figure 25: Delete Reminder/Recall Custom Letters Steps 1 and 2.*

1. Once users have navigated to the Reminder/Recall Custom Letter screen, click the Delete [Delete] button next to the letter to be deleted**.**
2. Click the OK [OK] button to delete the Reminder/Recall Custom Letter.

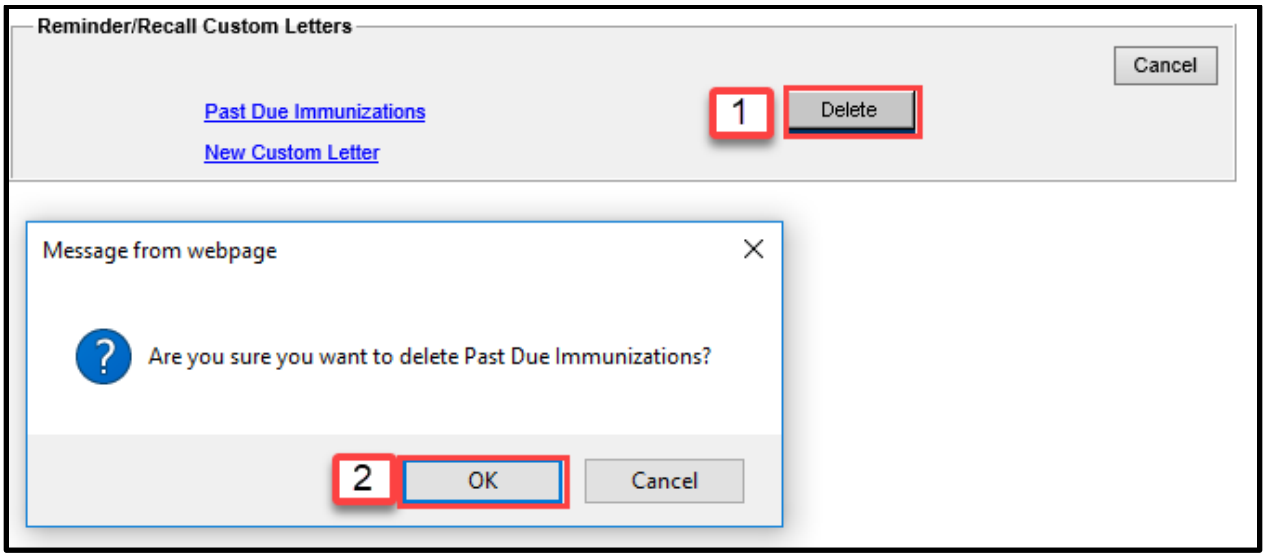


Figure 25: Delete Reminder/Recall Custom Letters Steps 1 and 2

Texas Immunization Provider Summary (TIPS) Guide

Section 1: Description of the TIPS Report

The TIPS report provides each registered organization in ImmTrac2 an overall summary of the user activity, online activity, and data exchange activity for the previous month.

Organization Details

See *Figure 1: Organization Details*.

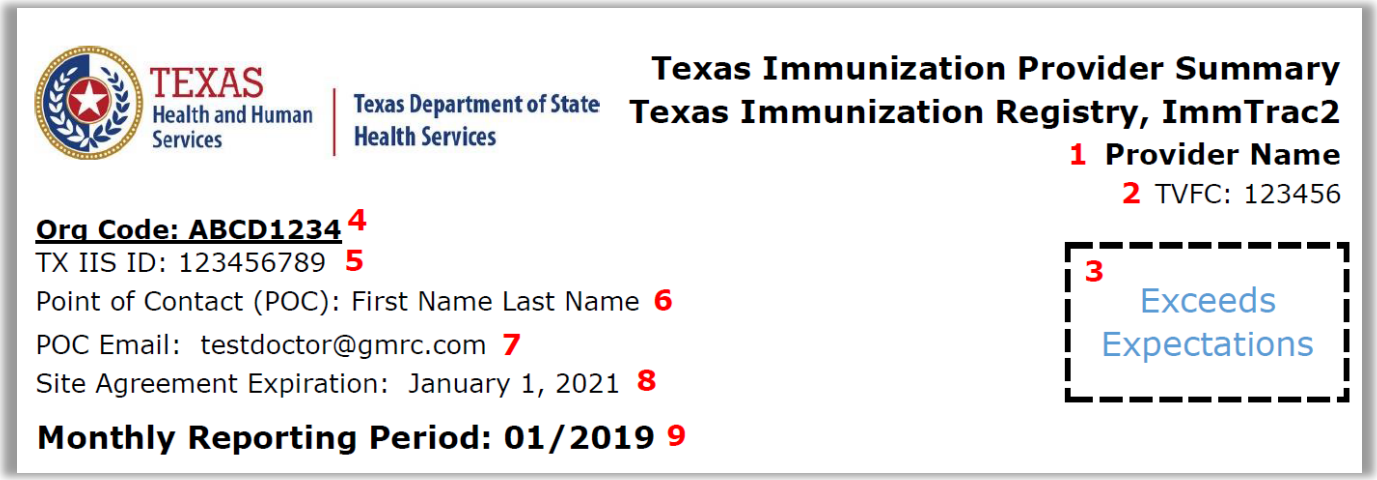


Figure 1: Organization Details

1. Facility/Organization Name as displayed in ImmTrac2.
2. TVFC/ASN provider identification number (if applicable).
3. Each organization will be rated based on the user activity, online activity, and data exchange activity (if applicable) for the previous month. Organizations will receive one of the following ratings: Exceeds Expectations, Meets Expectations, or Not Rated.
4. Org Code – Unique identifier for each organization.
5. TX IIS ID – Unique identifier for each organization.
6. Name of the Organization Point of Contact.
7. Email address of the Organization Point of Contact.
8. Expiration date of the ImmTrac2 site agreement.
9. Reporting period for the previous month and displayed as MM/YYYY.

User Activity Details

See *Figure 2: User Activity Details*.

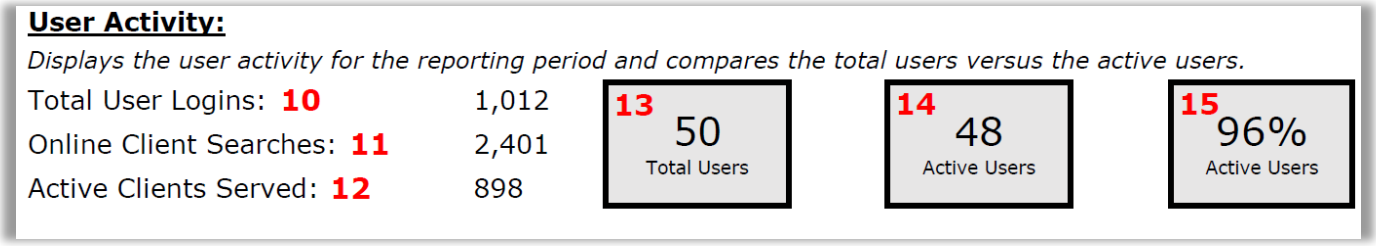


Figure 2: User Activity Details

10. Number of logins during the reporting period by active users (14).
11. Number of online clients searched during the reporting period.
12. Number of active clients associated to the organization.
13. Total number of users associated to the organization.
14. Number of active users associated to the organization.
15. % of active users.

Online Activity Details

See *Figure 3: Online Activity Details*.

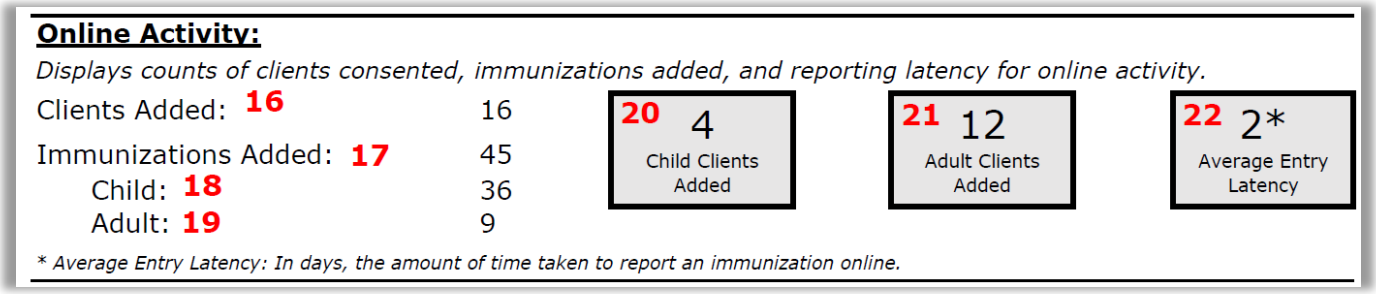


Figure 3: Online Activity Details

16. Total # of clients added online.
17. Total # of immunizations added online.
18. # of immunizations added online to minors.
19. # of immunizations added online to adults.
20. # of minor consents added online.
21. # of adult consents added online.
22. Average number of days between when an immunization was administered and added online in ImmTrac2.

Data Exchange Activity Details

See *Figure 4: Data Exchange Activity Details*.

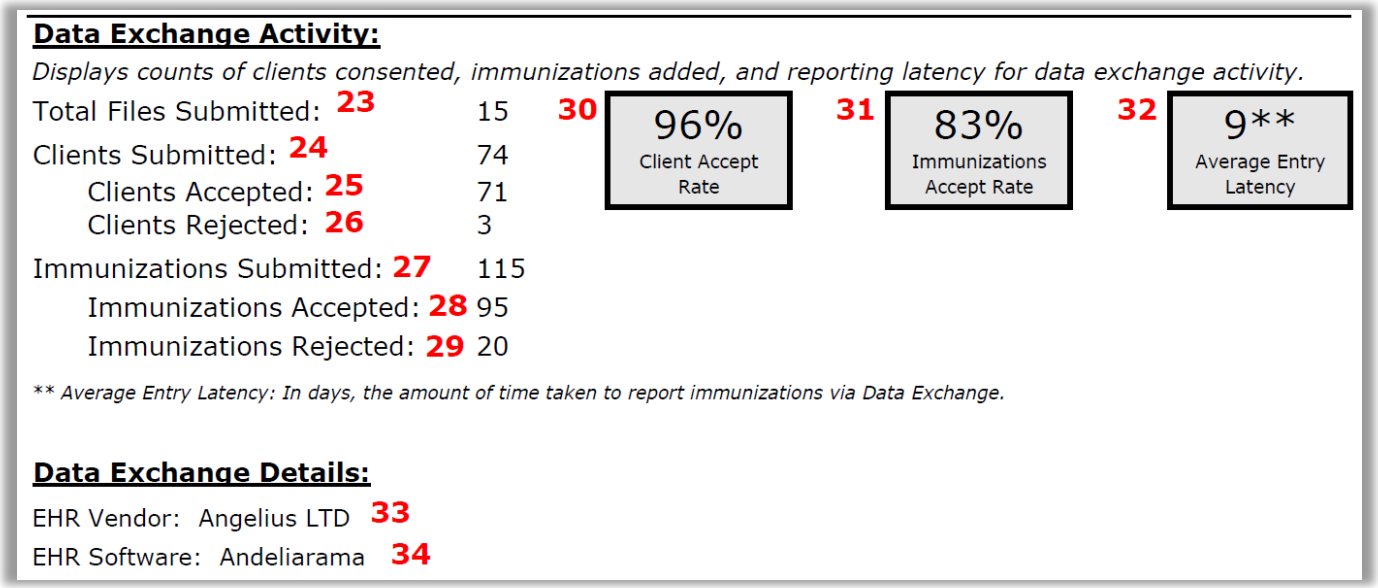


Figure 4: Data Exchange Activity Details

23. # of data exchange files submitted during the reporting period.
24. # of client records submitted.
25. # of client records accepted.
26. # of client records rejected.
27. # of immunizations submitted.
28. # of immunizations accepted.
29. # of immunizations rejected.
30. % of client records accepted.
31. % of immunizations accepted.
32. Average # of days between when an immunization was administered and added through data exchange.
33. Electronic Health Record (EHR) Vendor as indicated on the Registration of Intent.
34. EHR Software as indicated on the Registration of Intent.

NOTE: Regarding items 24, 25, 26, and 30, if a patient's data is submitted multiple times within a file they will be counted as unique patients, not the same patient. Example: Patient John Smith is reported three times in a file, the system will count John Smith as three clients not as one.

Section 2: How to Generate the TIPS Report

To generate the TIPS report, follow these steps:

1. Log into the appropriate organization in ImmTrac2.
2. On the left side of the screen, on the menu panel look for "Reports" and click on "generate report". See *Figure 5: Generate Report.*

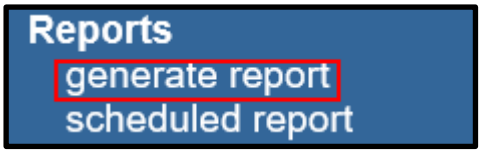


Figure 5: Generate Report

3. In the list of reports available, click on "Texas Immunization Provider Summary (TIPS)". See *Figure 6: Link for Texas Immunization Provider Summary (mockup).*

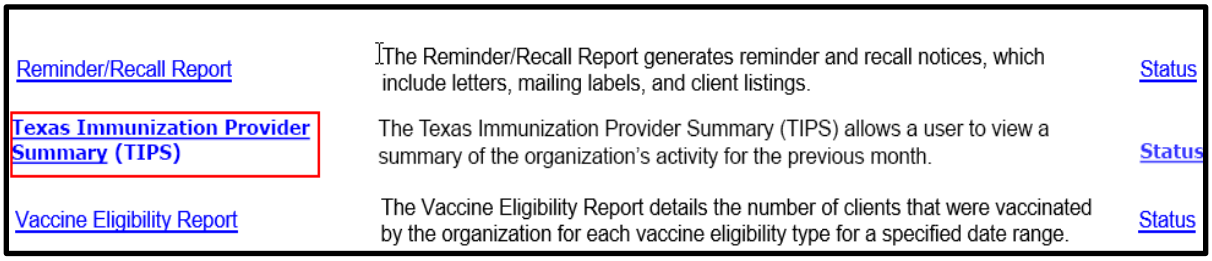


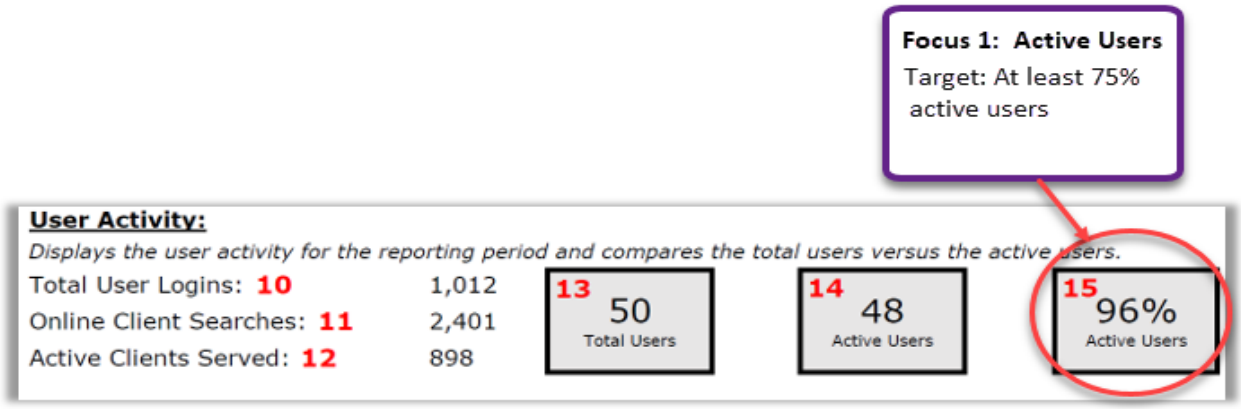
Figure 6: Link for Texas Immunization Provider Summary (mockup)

NOTE: The TIPS report is generated on the first day of each month and overwrites the previous month's report.

Section 3: Strategies to Optimize Your TIPS Rating

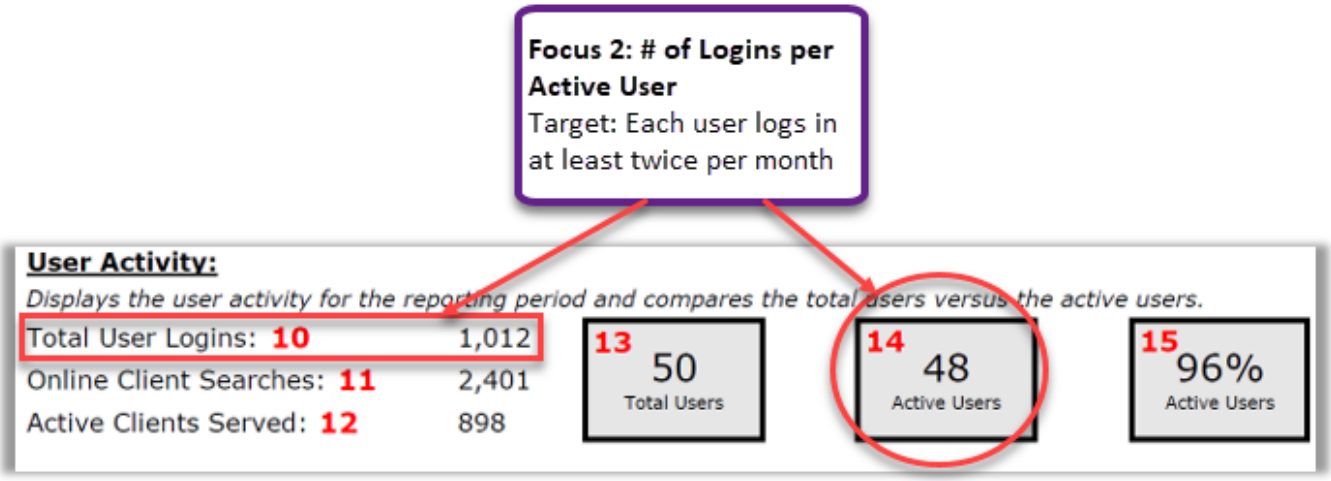
The following are focus areas to improve your organization's TIPS rating and to ensure that the data in ImmTrac2 is more complete, accurate, and reported in a timely manner.

Focus 1: Number of Active Users



- **Calculation**: The number of Active Users divided by the number of Total Users. An active user is one who has logged into ImmTrac2 within the past 90 days.
- **Target**: Greater than 75% active users.
- **Suggestions**:
  - Disassociate inactive users in your organization. Refer to *Section 4: Instructions to Request Adding or Disassociating Users*.
  - If adding or disassociating more than five users, please complete a Renewal of your Site Agreement in ImmTrac2.
- **Note**: Having a high percentage of inactive users is a security risk and asks the question, "Why do these users need access to ImmTrac2?". The Number of Active Users is the starting point for the remaining focus points.

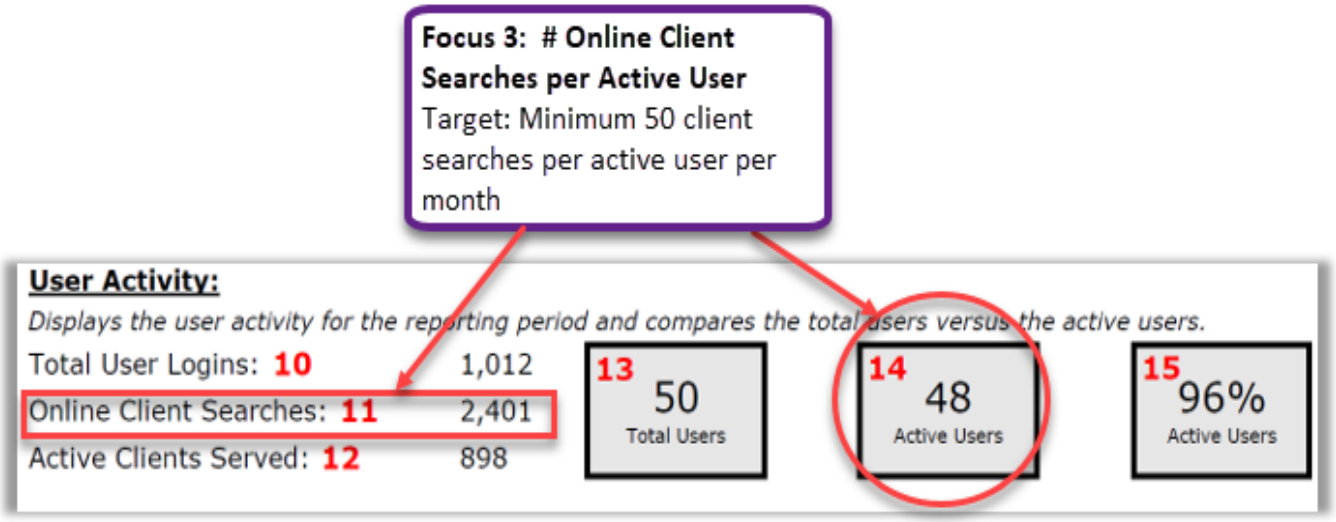
Focus 2: Number of Logins per Active User



- **Calculation**: The number of Total User Logins divided by the number of Active Users.
- **Target**: Each active user should log into ImmTrac2 twice per month.
- **Suggestions**: Before each patient encounter, users should log into ImmTrac2 to ensure:
  - The client has previously consented and been added to ImmTrac2. If the client is not found after performing a "smart" search, educate the client on the benefits of the Texas Immunization Registry and give them an opportunity to complete the ImmTrac2 consent form.
  - That client immunization records are up-to-date.

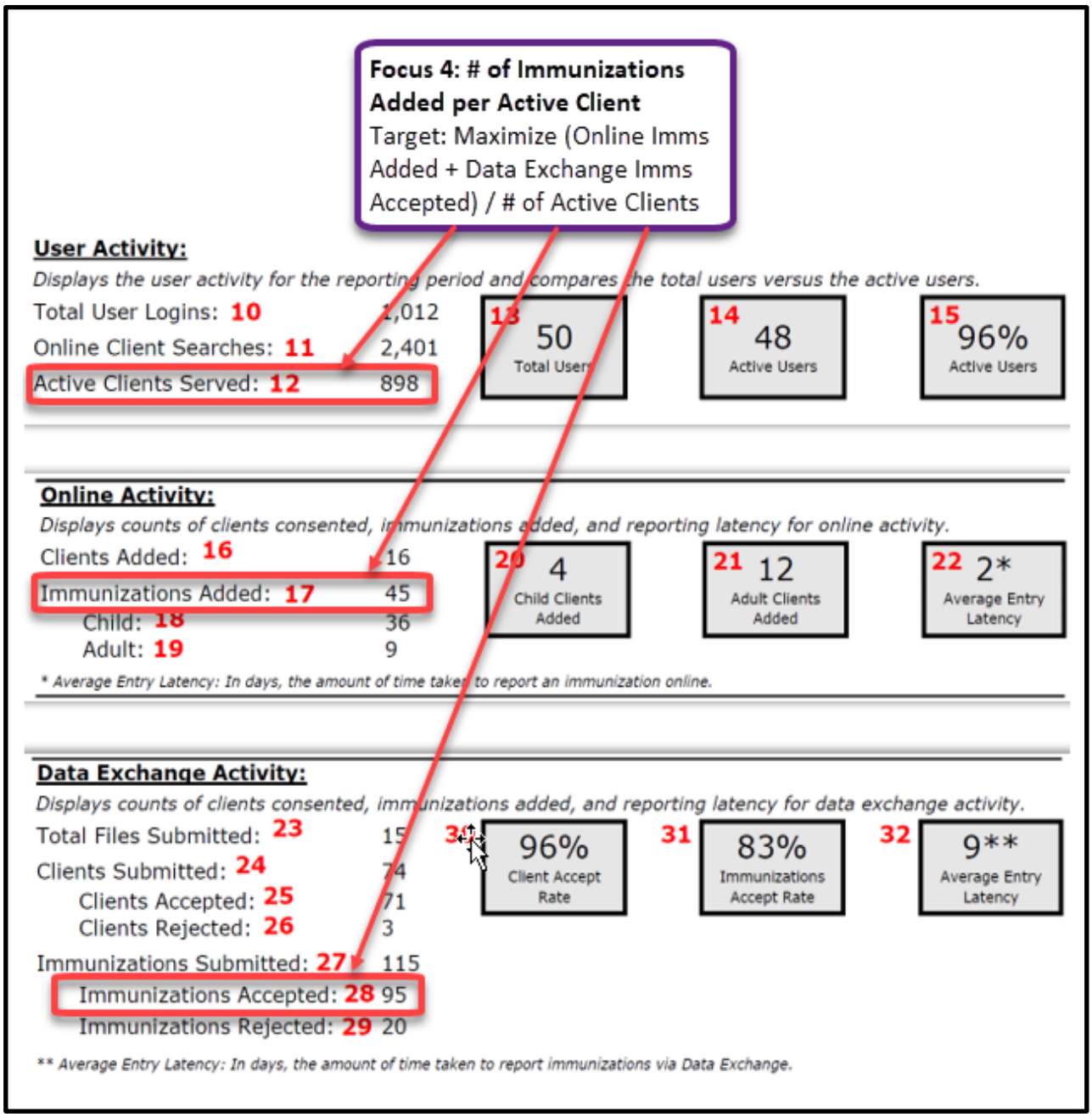
- Which shots are coming due and/or are past due.
- All ImmTrac2 users log in at least twice, including Data Exchange organizations.

Focus 3: Number of Online Client Searches per Active User



- **Calculation**: The number of Online Client Searches divided by the number of Active Clients Served.
- **Target**: Having a minimum of 50 client searches per active user per month.
- **Suggestions**:
  - Look up client immunization records before each visit. Client searches are preliminary to accessing a client's immunization record. Searches are also prerequisite to adding a new client online.
  - Review the "Benefits of Utilizing TIR Guide".

Focus 4: Number of Immunizations Added per Client



- **Calculation**: The sum of Online Immunizations Added and Data Exchange Immunizations Accepted, divided by the number of Active Clients Served.
- **Target**: Maximize this number.

- **Suggestions**:
  - Use the *Creating a List of Active Clients with the Ad Hoc List Report* to generate a List of Active Clients.
  - Using the Active Client list to update clients who are no longer under your care:
    - If clients have moved elsewhere or have not been seen for a long time, change their status to "inactive" in the Organization Information tab of the client record. See *Figure 7: Organization Information – Inactive Status.*

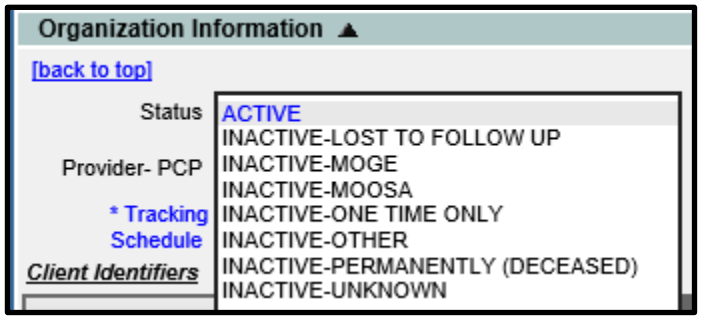
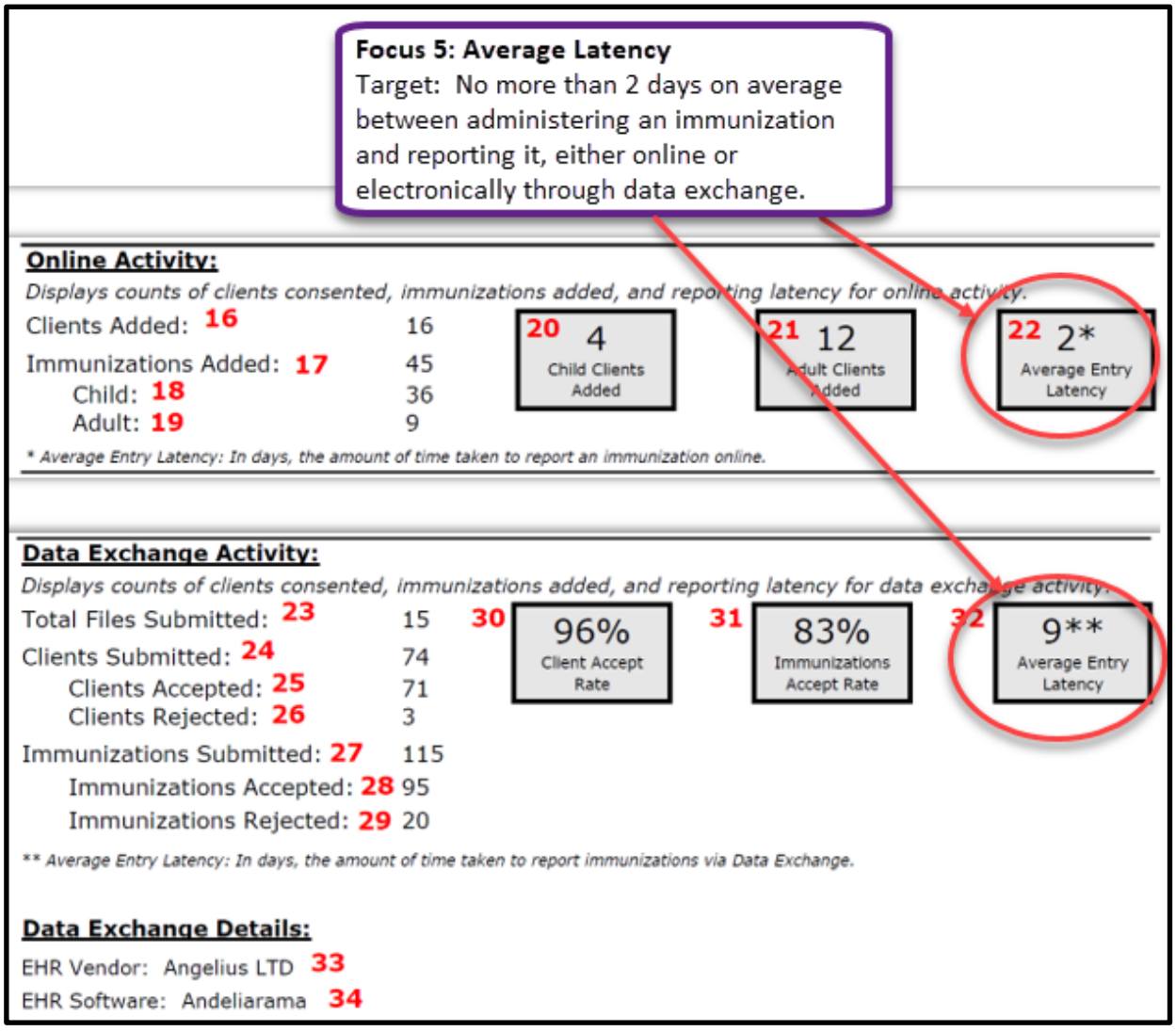


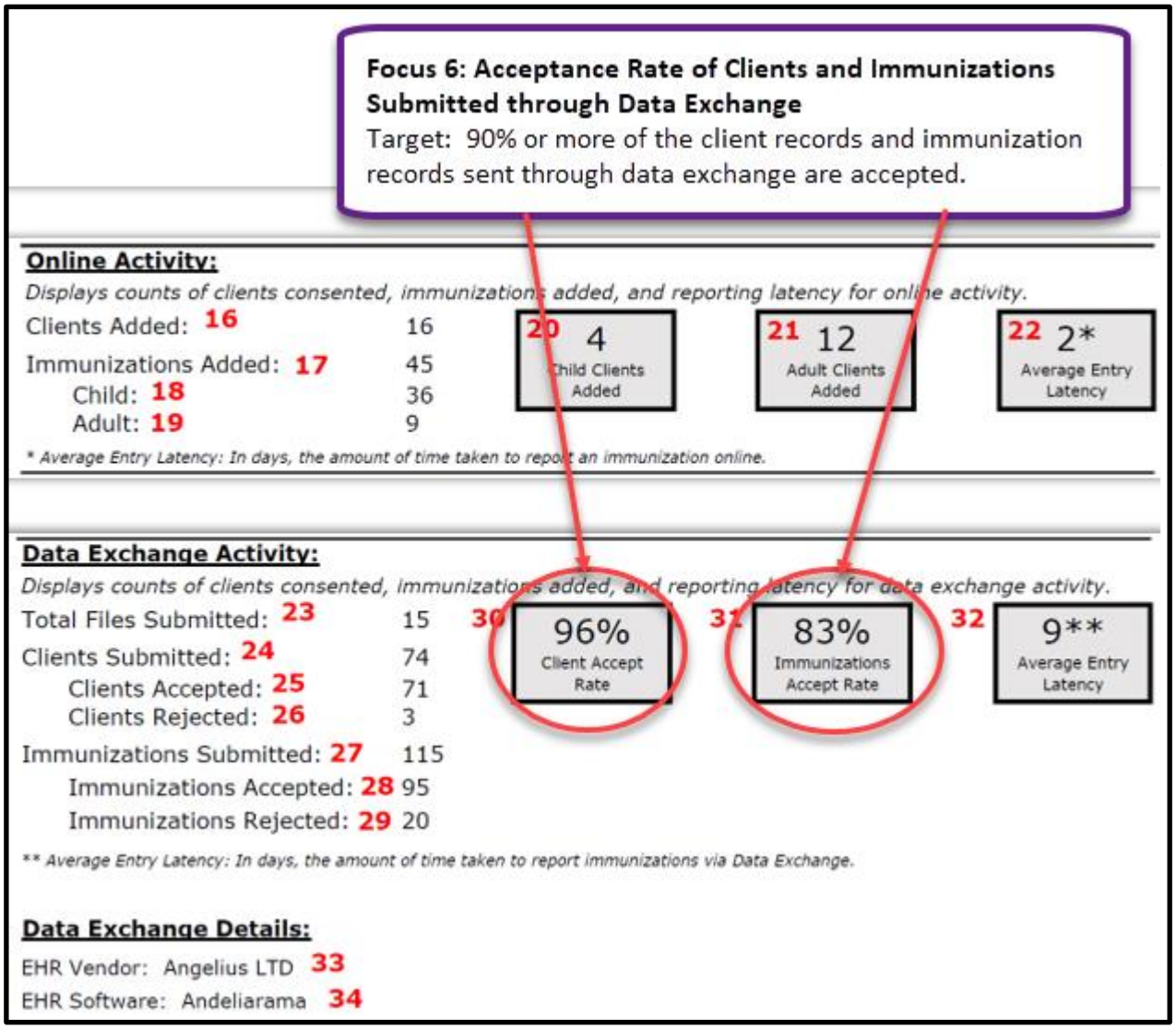
Figure 7: Organization Information – Inactive Status

Focus 5: Average Latency



- **Calculation**: The average of Online Average Entry Latency and Data Exchange Average Entry Latency.
- **Target**: No more than two days on average between administering an immunization and reporting it, either online through the user interface or electronically through data exchange.
- **Suggestions**:
  - Review your organizations procedures for entering immunizations to see what could help get immunizations entered more quickly after they are administered.

Focus 6: Acceptance Rate of Clients and Immunizations Submitted through Data Exchange



- **Calculation**: The average of the Client Accept Rate and the Immunizations Accept Rate, both from data exchange.
- **Target**: Greater than 90% of client records and immunizations sent through data exchange are accepted.
- **Suggestions**:
  - Contact the Texas Immunization Registry's Interoperability Team at (800) 348-9158, option 3, to receive help with your data exchange.
  - Contact your EHR vendor to correct issues resulting in errors.

Section 4: Instructions to Request Adding or Disassociating Users

Requests

All requests to ADD a new user or DISASSOCIATE a user must be requested by one of the following at the registered organization:

- Organization Point of Contact (POC),
- Primary Registry Point of Contact,
- Primary Vaccine Coordinator (listed in ImmTrac2), or
- Secondary Vaccine Coordinator (listed in ImmTrac2).

If you aren't sure who these contacts are at your organization, then:

1. Log into the appropriate organization in ImmTrac2.
2. Click on the "registration/renewal" tab at the top of the ImmTrac2 screen.
3. Click on "Access previously approved Registration or Renewal". See *Figure 8: Access Previously Approved Registration or Renewal.*

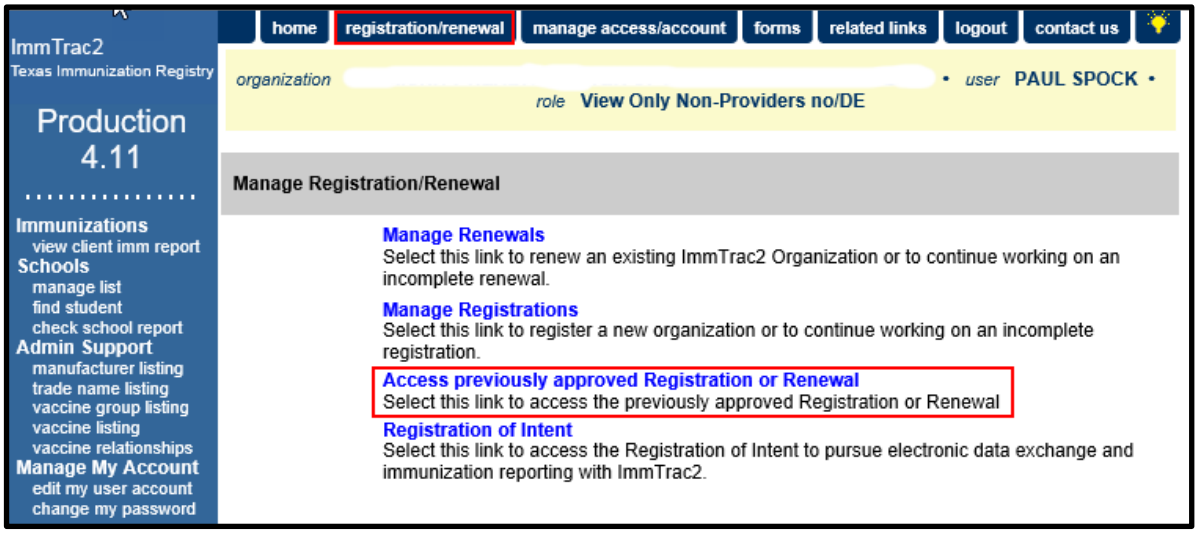


Figure 8: Access Previously Approved Registration or Renewal

4. Then click on the small black triangles to open the "Organization Point of Contact (POC)" tab and the "Primary Registry Contact" tab. This provides you the names of the individuals serving in these roles. See *Figure 9: POC and Primary Registry Contact Tabs*.

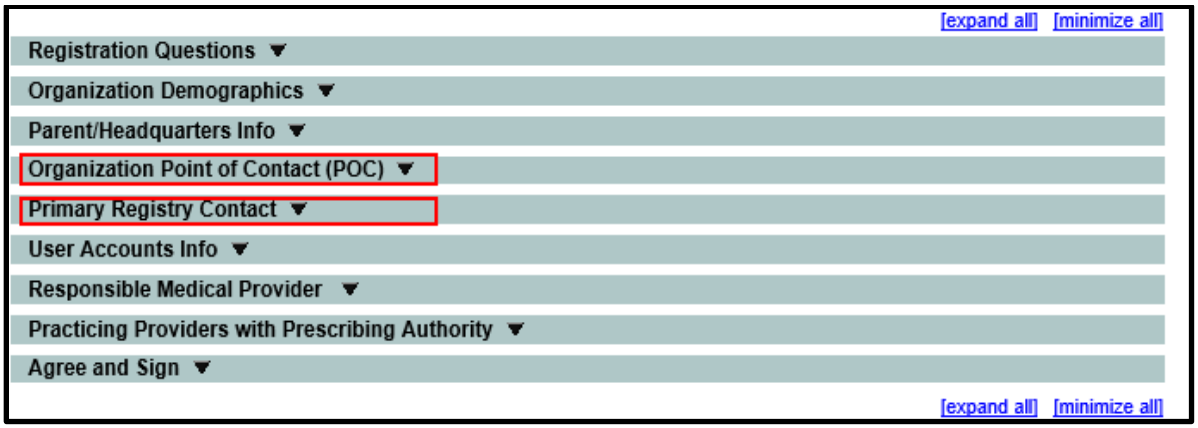


Figure 9: POC and Primary Registry Contact Tabs

5. E-mail requests to **ImmTrac2@dshs.texas.gov** using the Email Request Instructions and Email Request Template provided below.

More Than Five Users

If you have more than five users to add or disassociate, please submit a renewal of your site agreement and make the updates to the users through the renewal process.

Security Notes

- ImmTrac2 login credentials are assigned to an individual person and must not be shared. Repeated violations may result in loss of access privileges for the individual and/or the organization.
- Each ImmTrac2 user account requires a unique e-mail address so that ImmTrac2 users can reset their own passwords when needed.
- Organization Point of Contacts should carefully consider who needs ImmTrac2 access. Access requests should only be for individuals on a need-to-know and a need-to-have basis. Please do not add more users than what is needed. The more users requested, the longer the user creation process may take.
- Please instruct users at your organization to login as soon as possible. If new user accounts are not accessed within 30 days of creation, the account will be locked. If new user accounts are never accessed within 120 days of creation, they will be deleted.

Email Request Instructions to Add or Disassociate Up to Five Users

- Copy and paste the Email Request Template into an email.
- Add the missing information; and

- Organization and Point of Contact Information
- List of users to be added or disassociated
  - Put an "X" next to the Action Required of either adding or disassociating user.

- Add the subject line: Add-Disassociate Users for [Enter your Organization's Name].
- Send email to ImmTrac2@dshs.texas.gov.

Email Request Template

Organization and Point of Contact Information

ORGANIZATION NAME:
STREET ADDRESS:
POINT OF CONTACT (POC) FULL NAME:
PHONE NUMBER:
POINT OF CONTACT EMAIL ADDRESS:
ORGANIZATION'S ORG CODE, TX IIS ID# (aka PFS ID#): (if known)

List of Users to be Added or Disassociated

1st User Action Required: Add This User___ Disassociate This User ___

USER FIRST NAME:
USER LAST NAME:
UNIQUE USER EMAIL ADDRESS:
USER JOB TITLE:
CLINICIAN / NURSES LICENSE #:
PHONE NUMBER:

2nd User Action Required: Add This User___ Disassociate This User ___

USER FIRST NAME:
USER LAST NAME:
UNIQUE USER EMAIL ADDRESS:
USER JOB TITLE:
CLINICIAN / NURSES LICENSE #:
PHONE NUMBER:

3rd User Action Required: Add This User___ Disassociate This User ___

USER FIRST NAME:
USER LAST NAME:
UNIQUE USER EMAIL ADDRESS:

USER JOB TITLE:
CLINICIAN / NURSES LICENSE #:
PHONE NUMBER:

4th User Action Required: Add This User___ Disassociate This User ___

USER FIRST NAME:
USER LAST NAME:
UNIQUE USER EMAIL ADDRESS:
USER JOB TITLE:
CLINICIAN / NURSES LICENSE #:
PHONE NUMBER:

5th User Action Required: Add This User___ Disassociate This User ___

USER FIRST NAME:
USER LAST NAME:
UNIQUE USER EMAIL ADDRESS:
USER JOB TITLE:
CLINICIAN / NURSES LICENSE #:
PHONE NUMBER:

Section 5: Data Exchange Related Information

Focus 1: If Data Exchange Activity is blank

If the TIPS Report shows no data under the Data Exchange Activity, then the organization should review and complete the below qualifications to determine if they are ready to establish a data exchange connection with the registry (i.e., completing the registration of intent).

Registry Status Qualifications

1. Ensure the organization's information is up to date with the registry.
    a. The main headquarters or stand-alone facility is renewed with the registry.
        i. Renewal of location information is required every two (2) years.
    b. All associated facilities are registered as sub-sites of the main organization (i.e., not as a separate or stand-alone facility) with the registry.
        i. If the organization has multiple facilities, each facility that administers immunizations must be registered with the registry. Additionally, they must be properly linked as a sub-site to the main organization.

c. Organization's staff have active ImmTrac2 user accounts to login to the registry.

   i. Each facility within the organization must have designated staff who have an ImmTrac2 user account.

2. Identify staff at the organization who will be the lead contacts and/or team for establishing and overseeing the data exchange connection with the registry.

   a. Identified staff will collaborate with the registry throughout and after the data exchange connection is established.

   b. Suggested staff include, but not limited to, staff who oversee other types of data exchange for the organization, senior or lead clinical staff, subject matter experts, trainers, or IT support staff.

For assistance with ImmTrac2 registrations, renewals or user accounts, contact the Texas Immunization Registry Customer Service at (800) 348-9158.

Data Exchange Qualifications

1. To engage in electronic data exchange, the organization must have an EHR system that meets the registry standards and requirements.

   a. The organization, through their EHR system, must submit patient and immunization information in Health Level Seven (HL7) 2.5.1 Release 1.5 files to the registry.

      i. Speak with the EHR vendor to confirm the organization's systems are upgraded to send data in this format.

   b. The organization, through their EHR system, must be able to submit batch immunization files to the registry.

      i. Batch files means data is combined into one file that is submitted on a weekly basis. Speak with the EHR vendor to confirm batch HL7 files can be configured.

   c. The organization's patient and immunization data does not have data quality issues or errors. The organization must take and own responsibility of the patient and immunization data it submits as part of establishing a data exchange connection with the registry.

      i. To ensure the organization is submitting great data quality it must identify any data quality errors and correct them timely.

      ii. Speak with the EHR vendor to confirm the organization's systems are configured to the federal and state requirements for data exchange to decrease the likelihood of data quality errors.

Note: The registry verifies that the pre-requisite qualifications have been completed prior to establishing a data exchange connection with the organization (i.e., completing the registration of intent).

Focus 2: Establishing a Data Exchange Connection with the Registry

The following are the steps that must be completed for establishing a data exchange connection with the registry. For data exchange support, contact the Texas Immunization Registry at (800) 348-9158, option 3 or email at ImmTracMU@dshs.texas.gov.

Step 1: ImmTrac2 Registration/Renewal Information

Organizations must:

- Have up to date ImmTrac2 renewal agreements for all facilities registered with ImmTrac2 within their organization; and
- Register all facilities not currently registered with ImmTrac2 by completing an ImmTrac2 Site Agreement.

NOTE: Organizations with expired ImmTrac2 site agreements will not be able to proceed with Step 2: Registration of Intent until the agreements are renewed.

How to Register/Renew Information

Registrations

If the organization is not currently registered with ImmTrac2:

1. Go to the ImmTrac2 website https://immtrac.dshs.texas.gov.
2. Click the 'REGISTRATION' tab on the top menu of the site.
3. Click the 'Register' link in the middle of the site to register.
4. Fill in the initial information requested:
    - Email address; and
    - Texas Vaccines for Children (TVFC) Pin – if applicable.
5. Complete the registration form.
6. Sign & submit for approval.

Renewals

If the organization is currently registered with ImmTrac2 and the information on file is outdated or expired:

1. Login to ImmTrac2.
2. Click the 'registration/renewal' tab from the top menu.
3. Click the 'Manage Renewals' link on the page.
4. Complete the renewal form.
5. Sign & submit for approval.

Step 2: Registration of Intent (ROI)

The ROI:

- Allows health care entities to inform the registry of their readiness to begin to data exchange;
- Is accessible through ImmTrac2, once logged into the system;
- Can only be submitted by ImmTrac2 users associated to the main headquarters (aka parent organization) or stand-alone facility; and
- Is processed within 2-5 business days after it is submitted, the organization receives an *Invitation to Onboard* (via email) with instructions for establishing connectivity and testing requirements with the registry.

How to complete the ROI

1. Login to ImmTrac2.
2. Click the 'registration/renewal' tab from the top menu.
3. Click the 'Registration of Intent' link from the options listed under the Manage Registration/Renewal information.
4. Respond to the questions.
    - Once the initial two questions have been responded to additional questions will appear.
    - Select the method the organization will report data to the registry.
    - Select the EHR vendor and software used by the organization.
    - Add staff who will be the lead contacts and/or team for establishing and overseeing the data exchange connection with the registry.

- Select how often the organization will submit data to the registry.
- Review the organization information that is on file with the registry to ensure all the facilities are listed and accounted for.

5. Complete the registration of intent by clicking the 'Submit' button.

Step 3: Gaining Access to Data Exchange Methods

As part of establishing a data exchange connection with the registry, the organization is provided access (data exchange credentials) to the registry's data exchange methods which are used to send and receive data. The date exchange credentials are also known as File Transfer Protocol (FTP) credentials.

Overview

The organization's point of contact, as indicated in ImmTrac2:

- Receives the data exchange credentials in a secure email; and
- Is responsible for sharing the data exchange credentials with the organization's EHR vendor.

Data exchange credentials are:

- Completely different from the individual ImmTrac2 user accounts;
- Assigned to the organization, not an individual user; and
- To only be shared with persons responsible for establishing electronic connectivity between the organization and the registry.

FTP Information

The organization's point of contact receives a secure email containing the organization's assigned FTP information.

- FTP Username
- FTP Password
- Import Code
- Texas Immunization Information System (TX IIS) Identification (ID)
- FTP Specifications

Step 4: Testing

Testing Requirements

The registry requires all organizations to perform and pass testing to ensure the data exchange is configured to state standards.

- Organizations should use test patients while testing the data exchange connection.
- Any data submitted during testing is not imported to the registry.
    - If real patient data is sent it will not be imported and must be resubmitted once in production.

Organization's Responsibilities for Data Exchange

While in test, the organization must:

- Submit test files;
- Review the registry's generated data quality assurance reports on the submitted test files;
- Correct all data quality errors or issues;
- Submit subsequent test files and verify that data quality errors or issues were corrected; and
- Take and own responsibility of the patient and immunization data it submits as part of establishing a data exchange connection with the registry.

Testing Phase 1: Connecting to the Registry

- Connectivity test to ensure the organization properly uses the data exchange credentials to connect to the registry.
- Once successfully connected, the organization must perform user acceptance testing of the patient and immunization information.

Testing Phase 2: User Acceptance Testing

- Organizations must submit *at least one batch test HL7 file every 30 days* until they are promoted to production.
- The test files must depict the volume of data that the organization handles in real-life.
- Failure to submit files within the 30-day time frame may result in removal from the data exchange process.
- Files must be submitted using the required file naming convention: ImportCodeYYDDD.hl7
    - Import Code – represents the provider and identifies the source of the file and is assigned by the registry.
    - YY – identifies the two-digit calendar year.
    - DDD – identifies the three-digit Ordinal Date of the date the file is submitted to the registry.
    - .hl7 – is the file extension.

Steps for Testing

1. Submit batch HL7 file containing patient and vaccination information.
2. Receive an acknowledgement email from the Texas Immunization Registry indicating the file was received.
3. File is analyzed by the registry for any issues.
    a. Various stages of analysis are performed to identify any issues with the file.
    b. If there is a major issue with the file, it will not be processed, and an email notification of a fatal error will be sent.
        i. The fatal error(s) will need to be addressed by the organization and their EHR.
        ii. Once the fatal error(s) is addressed, start these steps over.
    c. The registry no longer sends email notifications about errors for the contents within the batch file.
    d. It is the responsibility of the organization to work with their EHR vendor on the review, correction and resubmission of the files to the registry.
4. File is processed.
    a. Files are typically processed within two business days of receipt.
5. Data quality reports are generated.
    a. The registry produces reports for the organization to review to identify data quality issues and are found in the FTP account.
    b. Data quality reports include error files and consent notification files.
6. Organization and EHR review the data quality reports.
7. Organization and EHR make corrections to data.

The organization and EHR:

- repeats these steps aiming for files returned with no errors;
- must achieve three to five (consecutive) error-free HL7 files to be considered for promotion to production.

Step 5: Production

Once the organization has successfully met testing requirements, they will receive an email notification of their promotion to production. The email contains instructions and requirements for ongoing data submission to the registry.

Important Information:

- All data submitted after promoted to production is processed as live.
- Organizations are required to submit data in accordance with their submission agreement during the registration of intent process (e.g., weekly, bi-weekly, monthly, annually, or real-time).
- Organizations changing vendors and/or desiring to test while in production must contact the Interoperability Team for guidance and support.
- No additional connectivity or delivery changes are required.

Step 6: Ongoing Submission of Data

Organizations must utilize the reports (dqa-reports and CNF) provided to them by the registry to meet the organization's responsibilities for data exchange.

Organization's Responsibilities for Data Exchange

An organization in production must:

- Submit patient and immunization data regularly;
- Regularly review the registry's generated data quality assurance reports or responses for data;
- Correct any data quality errors or issues timely; and
- Take and own responsibility of the patient and immunization data it submits.

Contact Information

For assistance with the registry, please contact the Texas Immunization Registry - Customer Support Team, Toll Free (800) 348-9158 or e-mail **ImmTrac2@dshs.texas.gov**.

TEXAS Health and Human Services | Texas Department of State Health Services

ImmTrac2 Guide to the Ad Hoc List Report

TEXAS Health and Human Services | Texas Department of State Health Services

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Getting Started

Purpose

The Ad Hoc List Report offers a user-defined report and lists results for Full-Access Provider users. You can select fields to be displayed in the report, define filters for which clients you wish to include, and choose the sort order for the report, which makes it a good choice for creating a list of active clients.

Recommended Browser

See *Figure 1: Icons for Browsers*. The recommended browser for ImmTrac2 is **Google Chrome**. ImmTrac2 does not support Windows 10 Edge. Users may experience issues using ImmTrac2 with Edge on drop-down menus or radio button selection and other functions.

Figure 1: Google Chrome Browser

Getting Started with the Ad Hoc List Report

- Log into the appropriate organization in ImmTrac2. On the left side of the screen, on the menu panel look for "Reports" and click on "generate report". See Figure 2: Generate Report.

Figure 2: Generate Report

- In the list of reports available, click on "Ad Hoc List Report". See Figure 3: Ad Hoc List Report.

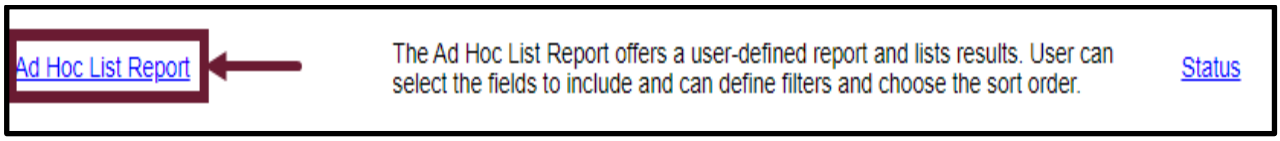

Figure 3: Ad Hoc List Report

Section 1: Choose Active Clients, Inactive Clients, or Both

The first choice to make is if you want to list active clients or inactive clients (see *Figure 4: Select Active or Inactive Clients*. To create a list of active clients, click on "Active" and then click the "Add" button, or double-click the "Active" link. The word Active will be moved from the left box to the right box. In this example, do not click on any of the inactive statuses because you want to create a list of active clients.

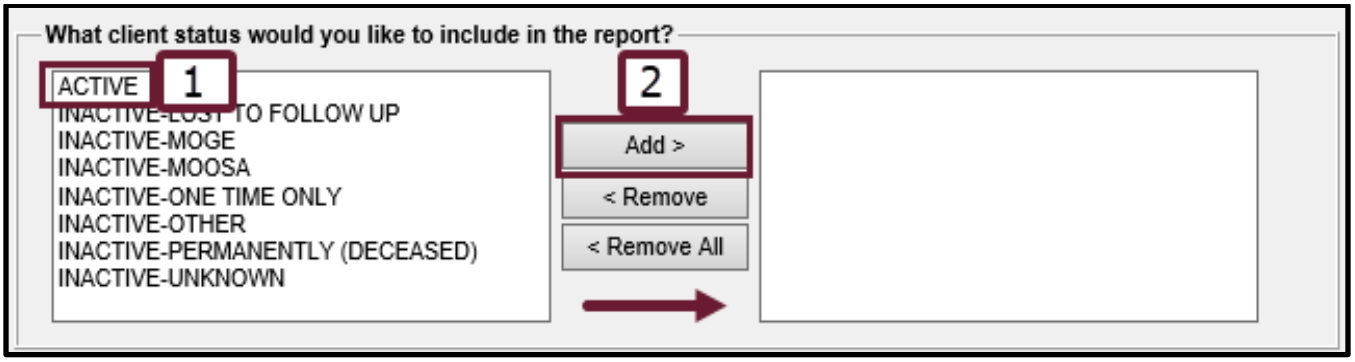

Figure 4: Select Active or Inactive Clients

Note that **clients can be active in more than one organization**. An example would be if a client in Austin has difficulty getting a COVID-19 immunization but drives to Round Rock or San Antonio and receives the immunization. In that case, the client would still be active in the original organization in Austin, but would also be active in the organization that administered the COVID-19 immunization and entered it into ImmTrac2.

When you search for clients who are active in your organization, you will get clients you gave immunizations to, including clients you normally do not see.

Likewise, if some of your clients went to another organization and received an immunization, the immunizations given by other organizations will be listed on the immunizations that your client received, even though they were not administered by you.

If you look in the client's record and see an immunization that has a "No" in the Owned column for that immunization, then another organization administered that immunization (see Figure 5: Not Owned By Your Organization). You can see which organization administered the immunization by clicking on the word "No".

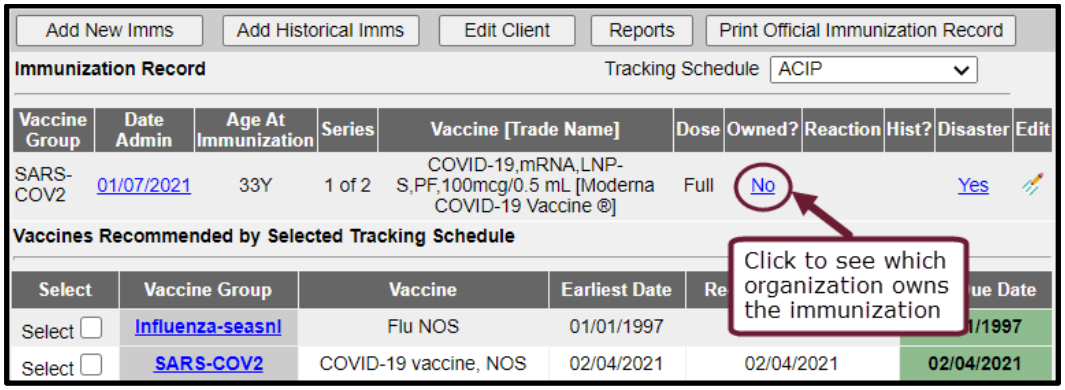

Figure 5: Not Owned By Your Organization

Section 2: What Items Do You Want to Display?

The second choice to make is which items you want to display on the client listing. See *Figure 6: Items to be Displayed on the Report*. The window on the left side lists items you can select to be displayed on the report, and the window on the right-side lists items that you have selected to be displayed.

To select an item to display, either double-click on an item in the left window, or click once on the item and then click the "Add" button. After an item has been selected it will be moved to the window on the right.

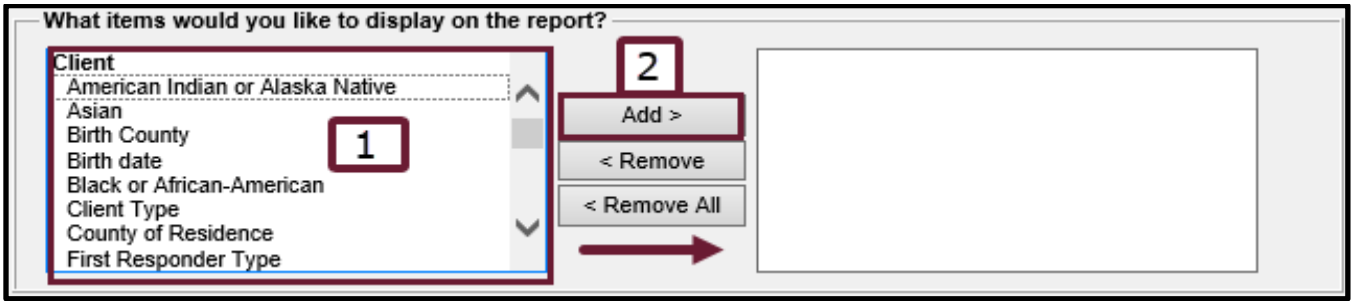

Figure 6: Items to be Displayed on the Report

Some items you might want to display would be First name, Last name, Birth date, Gender, Trade name, Vaccination date, Vaccine. See *Figure 7: Example of Selected Items*.

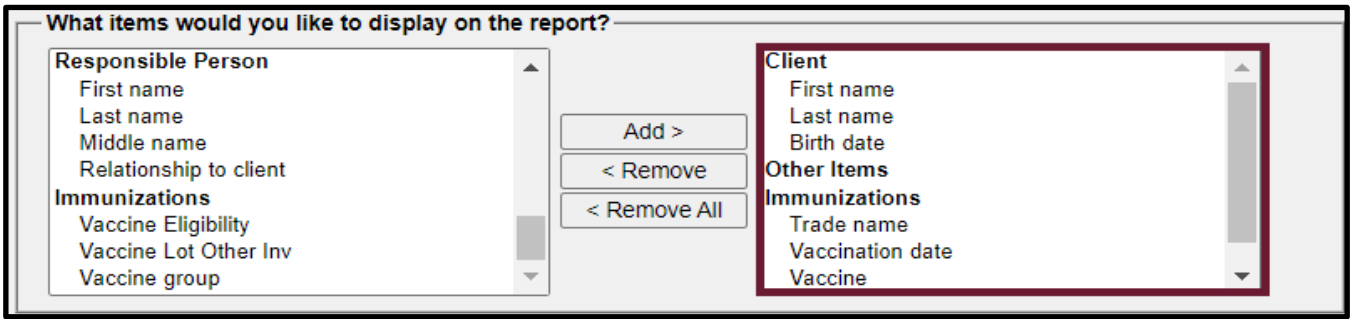

Figure 7: Example of Selected Items

To reverse the selection, either double-click on the item in the right window, or click once on the item and then click the "Remove" button. Clicking "Remove All" will remove all selections and allow you to start over. See *Figure 8: Removing Items to be Displayed*.

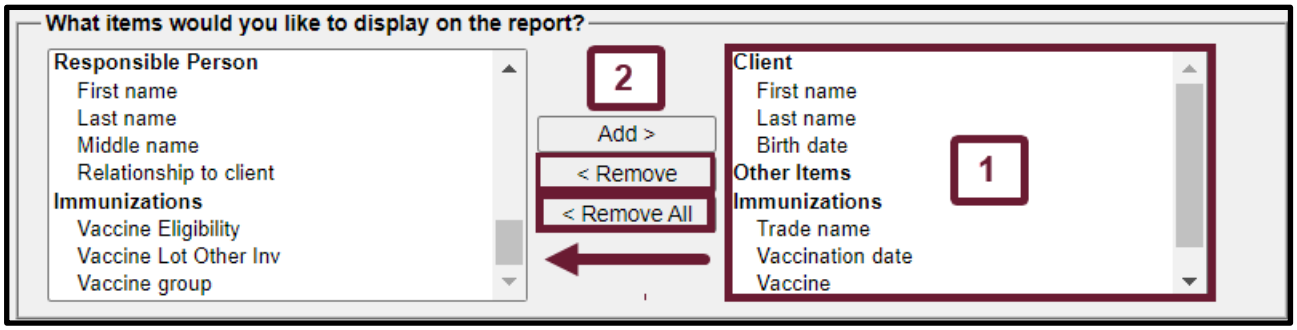

Figure 8: Removing Items to be Displayed

Section 3: "How would you like the report to be sorted?"

In the third section, choose which item you want the report to be sorted on, and if you want the sort order to be "First-to-Last" or "Last-to-First". See *Figure 9: Choosing How to Sort*.

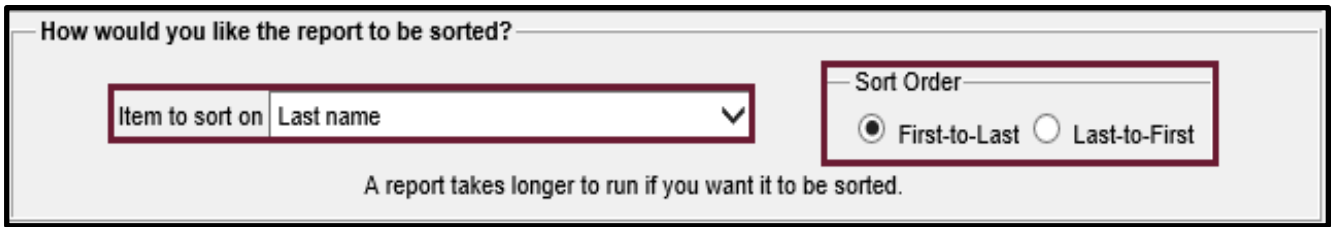

Figure 9: Choosing How to Sort

Note that the list of items to sort on will be the same list that you chose to display in the prior step. In other words, you can't sort on an item that you didn't already choose to display.

Section 4: "How would you like to filter the data?"

You don't have to enter anything in the third section if you do not want to filter the data you have already chosen. Here's how you build a filter (see *Figure 10: Building a Filter*):

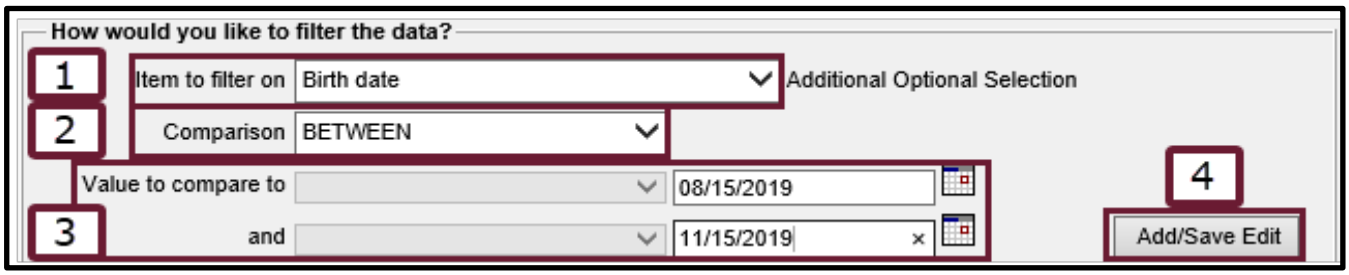

Figure 10: Building a Filter

- **Step 1**: Choose an item to filter on from the drop-down list. In this example "Birth date" was chosen.
- **Step 2**: Choose a comparison. The options you have for comparisons depend on the item you chose in step 1. In this example, the comparison options are "before", "Equals", "Not equal to", "After", Between", "Is", and "Is Not".
- **Step 3**: Select values. In this example, the data is set to select clients whose birthday lies between 8/15/2019 and 11/15/2019.
- **Step 4**: Click the "Add/Save Edit" button to add this edit to the filter. See Figure 10: Generating the Report for the next steps:

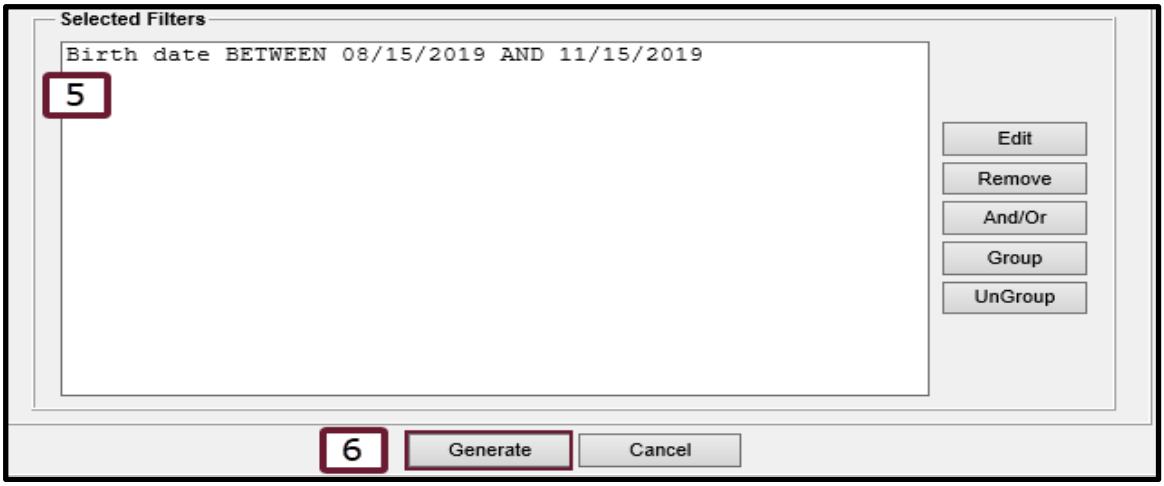

Figure 10: Generating the Report

- **Step 5**: Note that the filters previously selected have been added to the "Selected Filters" box.
- **Step 6**: You can click the "Generate" button to generate the report, or you can continue to build more complex filters (see the section on Building Complex Filters later).

After you click the generate button, the Ad Hoc Report Status screen appears and will display "PROCESSING" in the status column. As the report generates it will display the status as a percentage. Click the "Refresh" button to get updates. See *Figure 11: Refresh Button*.

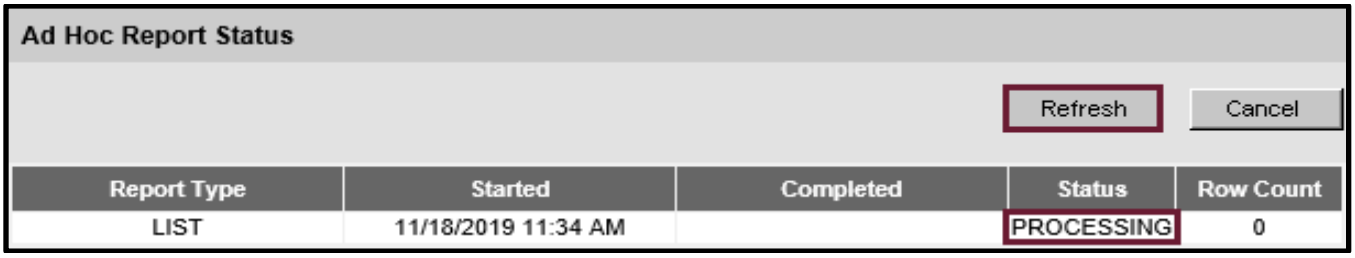

Figure 11: Refresh Button

Once the report has generated the status will change to "DONE" and can be accessed by clicking the "LIST" link to see the report. See *Figure 12: The LIST Link to the Report*.

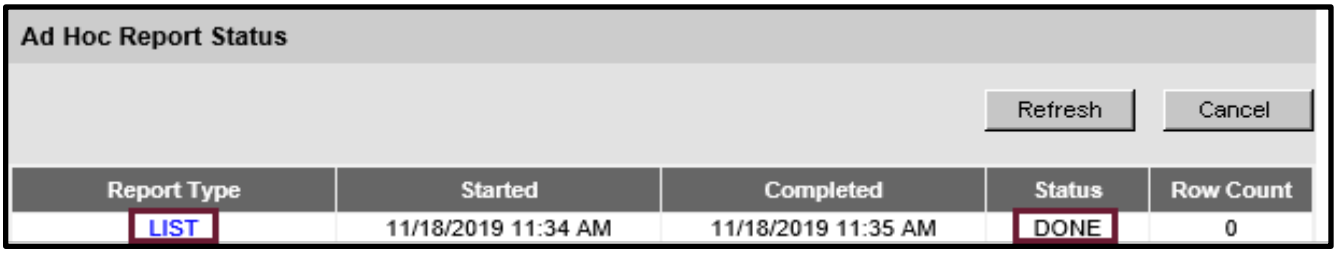

Figure 12: The LIST Link to the Report

Please note that only one Ad Hoc List Report can be generated at a time. If the report is still being processed and you need to do other work in ImmTrac2, as long as you stay logged in to that organization you can go back to the generated reports and click the "Status" link of the Ad Hoc List Report to take you back to the Ad Hoc Report Status screen and see if the report is done. See *Figure 13: Status Link to the Report*.

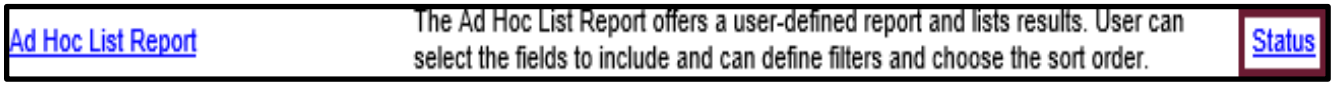

Figure 13: Status Link to the Report

Section 5: Building Complex Filters

You can combine edits to create more complex filters. For example, if you want to restrict the data to clients who were born between 01/01/1970 and 01/01/2000, you could additionally filter on a group of vaccines and again click the "Add/Save Edit" button to add that to the selection criteria. See *Figure 14: Filter with a Group of Edits*.

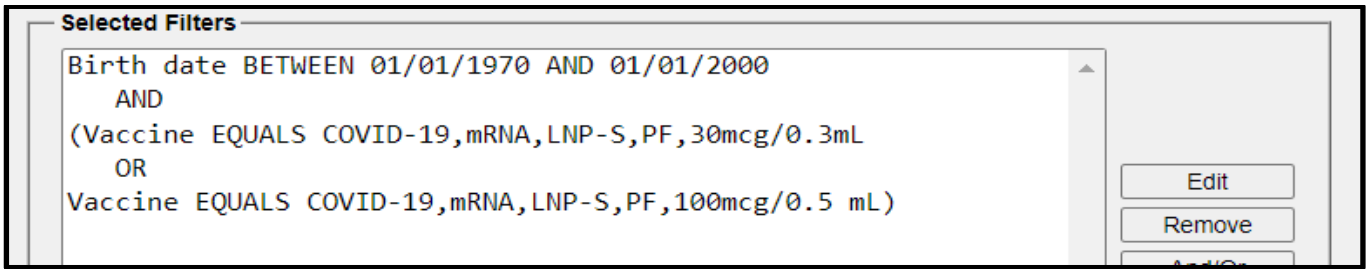

Figure 14: Filter with a Group of Edits

5A. Building Complex Filters: Edit Button

To change an edit line in the filter, click on the edit (in this case Birth date BETWEEN 01/01/1970 AND 01/01/2010) and then click the "Edit" button. You will be able to change that line. See *Figure 15: Edit Button*.

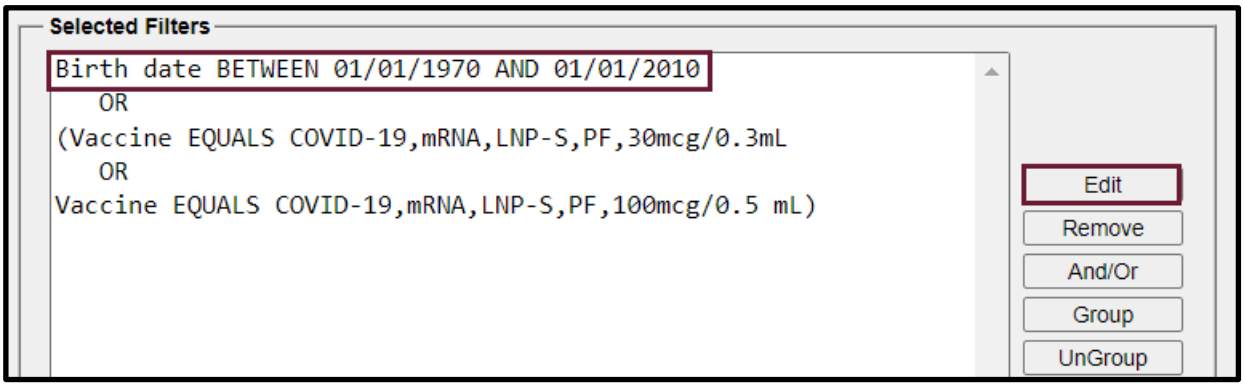

Figure 15: Edit Button

5B. Building Complex Filters: Remove Button

To remove an edit line from the filter (in this case Birth date BETWEEN 01/01/1970 AND 01/01/2010), click on the line and then click the "Remove" button. See *Figure 16: Remove Button*.

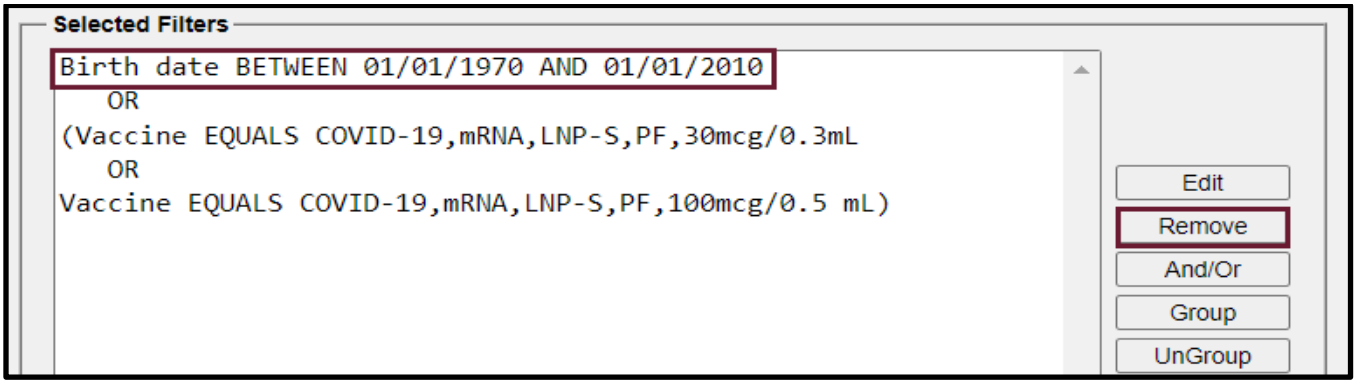

Figure 16: Remove Button

5C. Building Complex Filters: And/Or Button

If you have multiple lines and want to switch an "AND" to an "OR" or vice versa, click the "AND" or "OR" and then click the "And/Or" button. The button will toggle between "AND" and "OR". See *Figure 17: And/Or Button*.

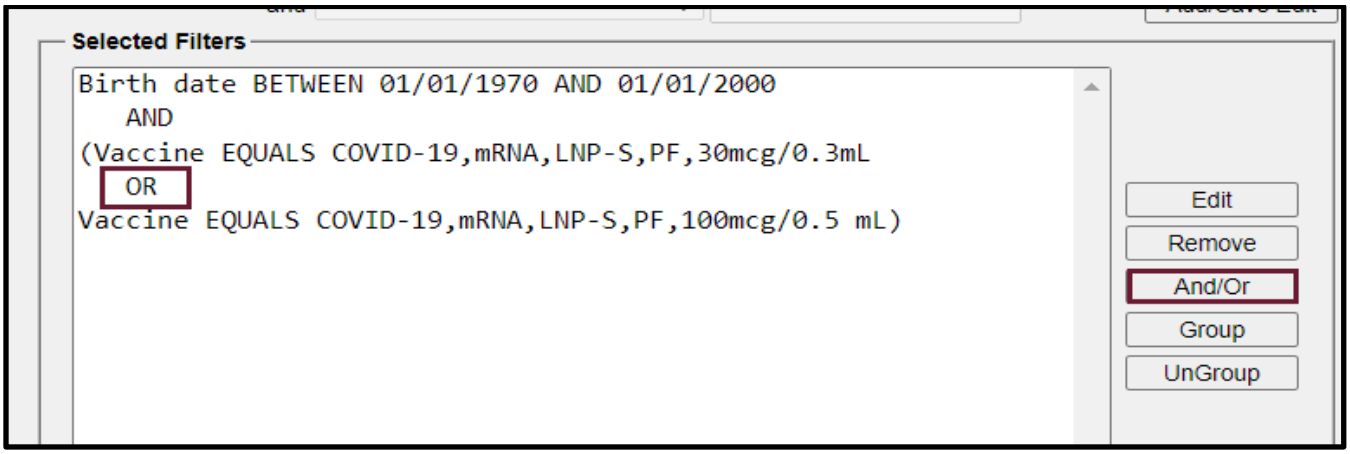

Figure 17: And/Or Button

5D. Building Complex Filters: Group Button

If you wish to group edits, such as this example that groups COVID-19 vaccines, after the edits have been entered, select the edit lines that you wish to group and then click the "Group" button. See *Figure 18: Group Button*. The group will be enclosed by parentheses.

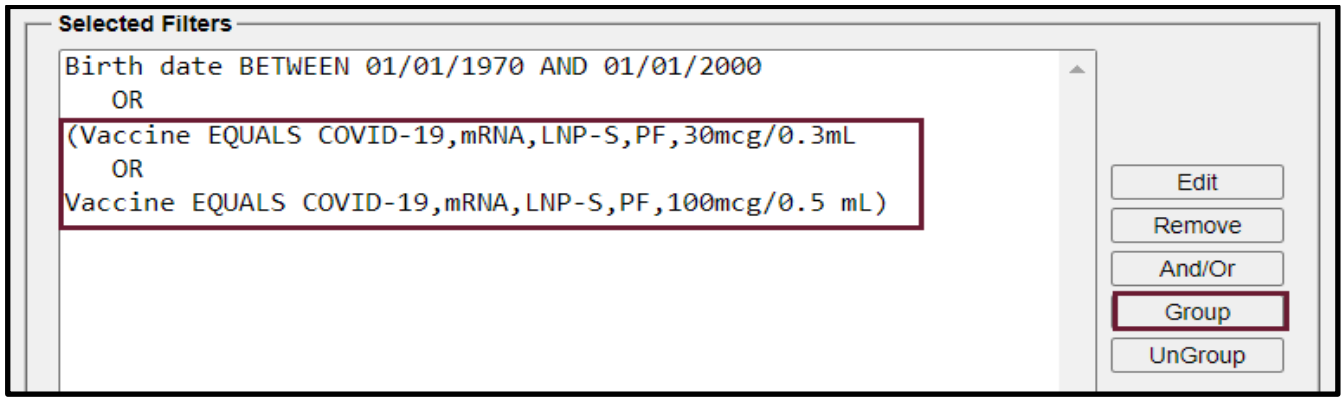

Figure 18: Group Button

5E. Building Complex Filters: UnGroup Button

The UnGroup button functions as the opposite of the Group button. Select a set of edit lines that you have grouped and wish to no longer group, then select the "UnGroup" button. See *Figure 19: UnGroup Button*. The parentheses surrounding the group will be removed.

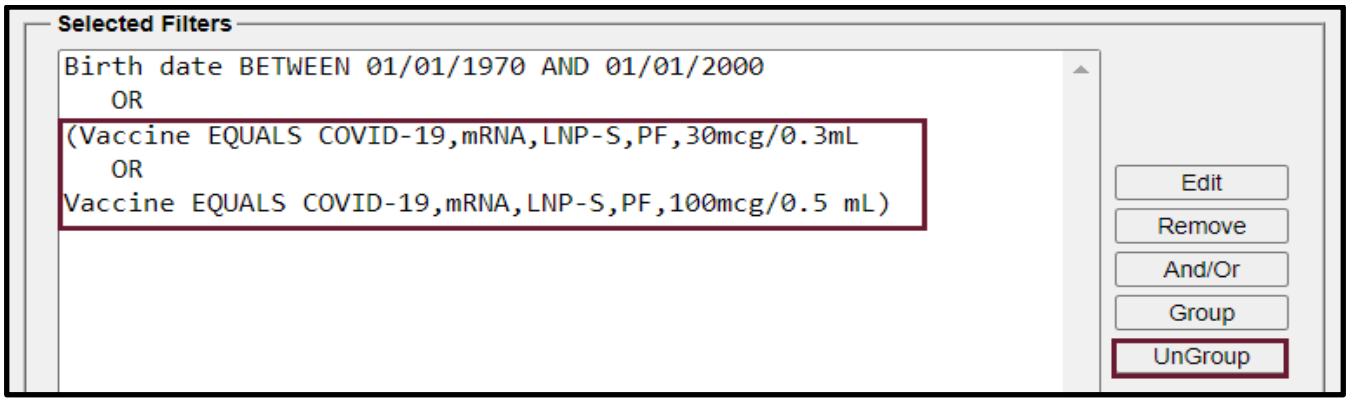

Figure 19: UnGroup Button

Section 6: How Clients Become Active

You might ask, "What makes a client active in an organization?" The status of a client will change from Inactive status to Active status if an organization:

- Creates a new client record,
- Adds an historical immunization to a client,
- Adds a new immunization to a client,
- Manually edits the Status field in the Organization Information tab of a client record to change it from inactive status (see *Figure 20 – Inactive Status*) to active status (see *Figure 21 – Active Status*), or

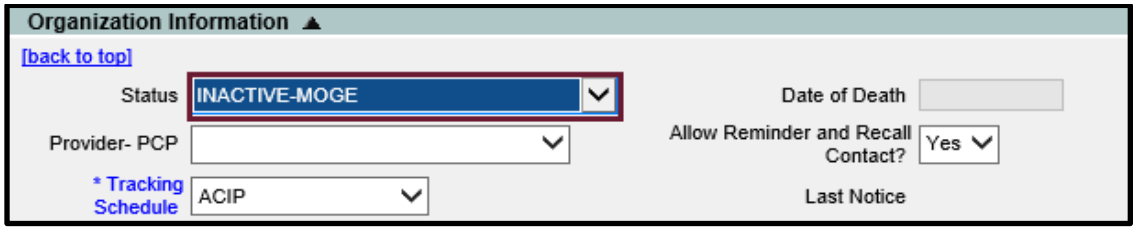

Figure 20 - Inactive Status

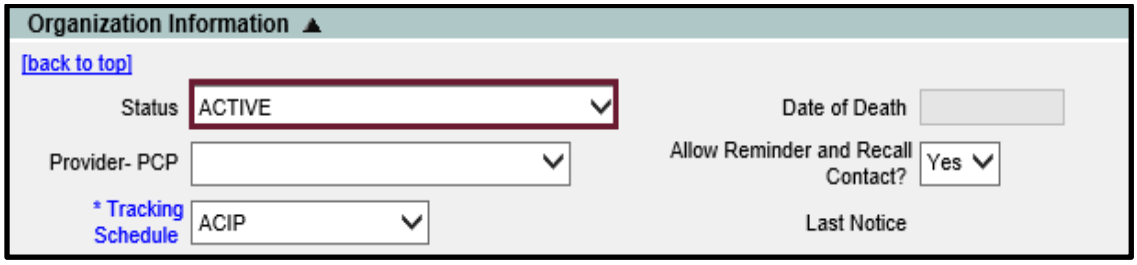

Figure 21: Active Status

- Uses the "manage client status criteria" feature in ImmTrac2 to change client status to or from active or inactive (see Figure 22 – Manage Client Status Criteria).

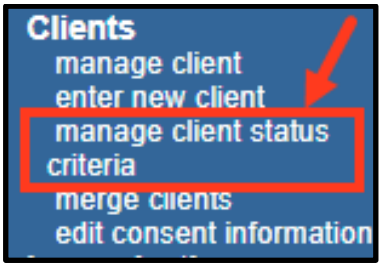

Figure 22 - Manage Client Status Criteria

For further information on how to use this feature, go to the Forms and Documents webpage and look for publication "11-15951 ImmTrac2 Manage Client Status Criteria".

Section 7: How to Inactivate Clients

If you have clients that you have not seen in what you consider to be a long time and wish to make them inactive, you can do that by either:

- Manually editing the Status field in the Organization Information tab of a client record to change it from inactive status (see *Figure 23 – Inactive Status*) to active status (see *Figure 24 – Active Status*), or

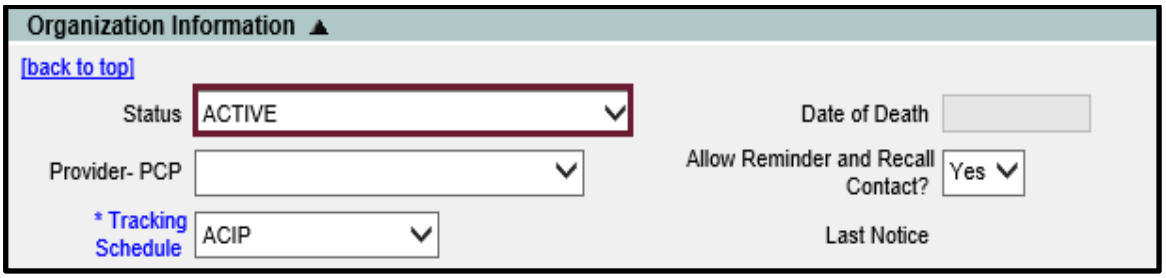

Figure 23: Active Status

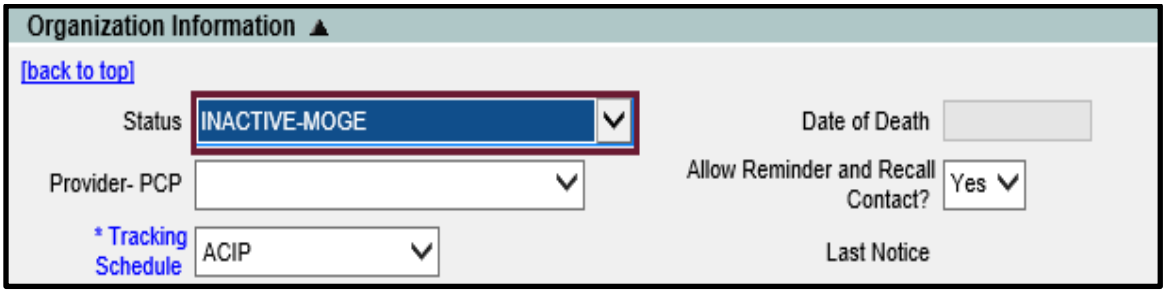

Figure 24 - Inactive Status

- Using the "manage client status criteria" feature in ImmTrac2 to change client status to or from active or inactive (see Figure 25 – Manage Client Status Criteria). For further information on how to use this feature, go to the Forms and Documents webpage and look for publication "11-15951 ImmTrac2 Manage Client Status Criteria".

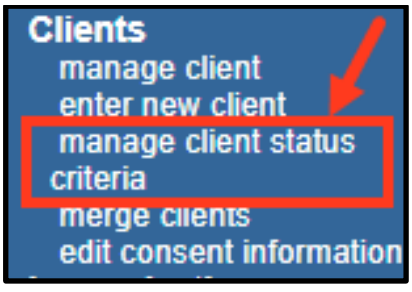

Figure 25 - Manage Client Status Criteria

Clients can also be flagged as 'Inactive' through data exchange. For additional information please contact your Electronic Health Records (EHR) vendor or the ImmTrac2 Interoperability Team toll free at (800) 348-9158 or email ImmTrac2@dshs.texas.gov.

TEXAS Health and Human Services | Texas Department of State Health Services

The Texas Immunization Registry:

ImmTrac2 Manage Client Status Criteria

Texas Department of State Health Services
Immunization Unit

Stock No. 11-15951
Rev. 10/2020

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Introduction

To use the Manage Client Status feature, select the "manage client status criteria" link in the menu bar on the left side of the screen (see *Figure 1 – Link to Manage Client Status Criteria*).

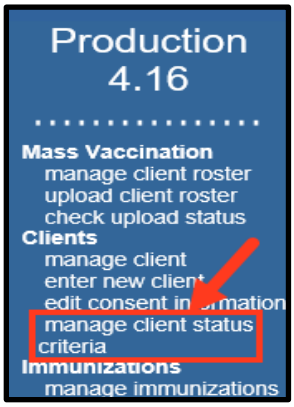


Figure 1 - Link to Manage Client Status Criteria

With the Manage Client Status Criteria feature, providers can retrieve a group of clients based on specific search criteria and perform bulk changes to the client status without having to go into each client record individually through the ImmTrac2 Manage Client screen. Exception: Clients with a status of "Deceased" will be updated individually through the "Manage Client" screen.

For example, providers who had clients that had moved away but were still listed as their clients now have an efficient way to change clients' status in their organization from "active" to "inactive". See *Figure 2 – Manage Client Status Criteria*.

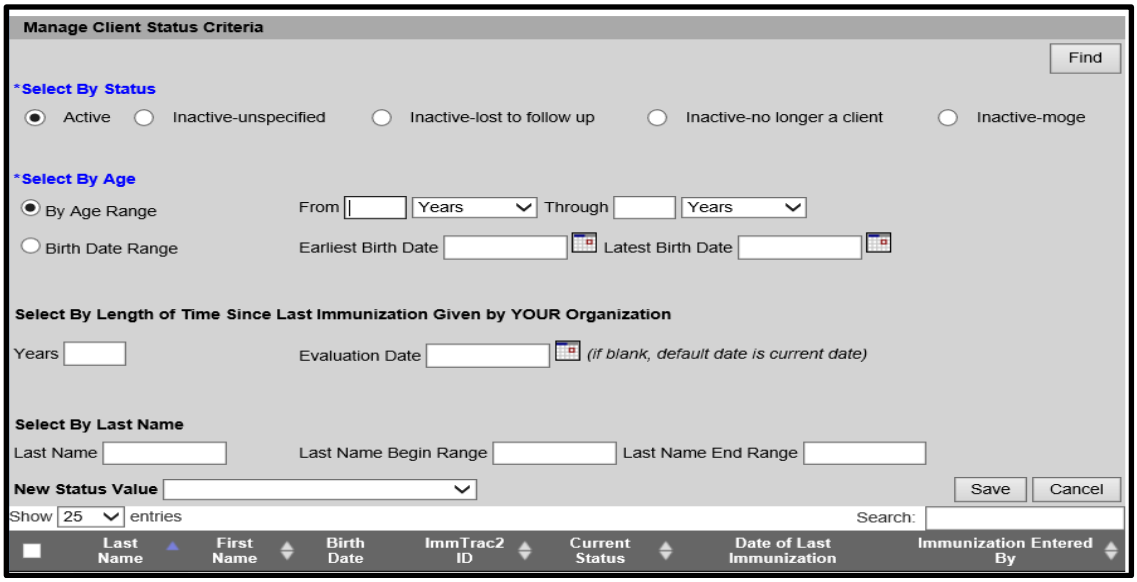


Figure 2 - Manage Client Status Criteria

The four areas of the Manage Client Status Criteria are (see *Figure 3: The Filters and Display Table* below):

1. **Required Filters**. These filters by status and range of ages or birth dates must be used.
2. **Optional Filters**. These filters are not required and include selecting clients by the number of years since a specified date.
3. **Optional Real-Time Search Filter**. This filter works with the Display/Change Status Table below it. Any set of characters that you enter in the "Search" field will be used to search each row in the table below and if it finds a match, the client on that row is included in the selection.
4. **Display/Change Status Table**. This table lists the clients that have met **ALL** the criteria you enter in the filters above. Only clients that met the requirements of the Required Filters AND the Optional Filters AND the Option Real-Time Filter will be displayed I the Display/Change Status table. By selecting clients listed in the table and using the New Status Value field and the Save button, the status of all selected clients can be changed.

   Clients with the Allow Reminder and Recall Contact flag set to "No" will be excluded from the search results.

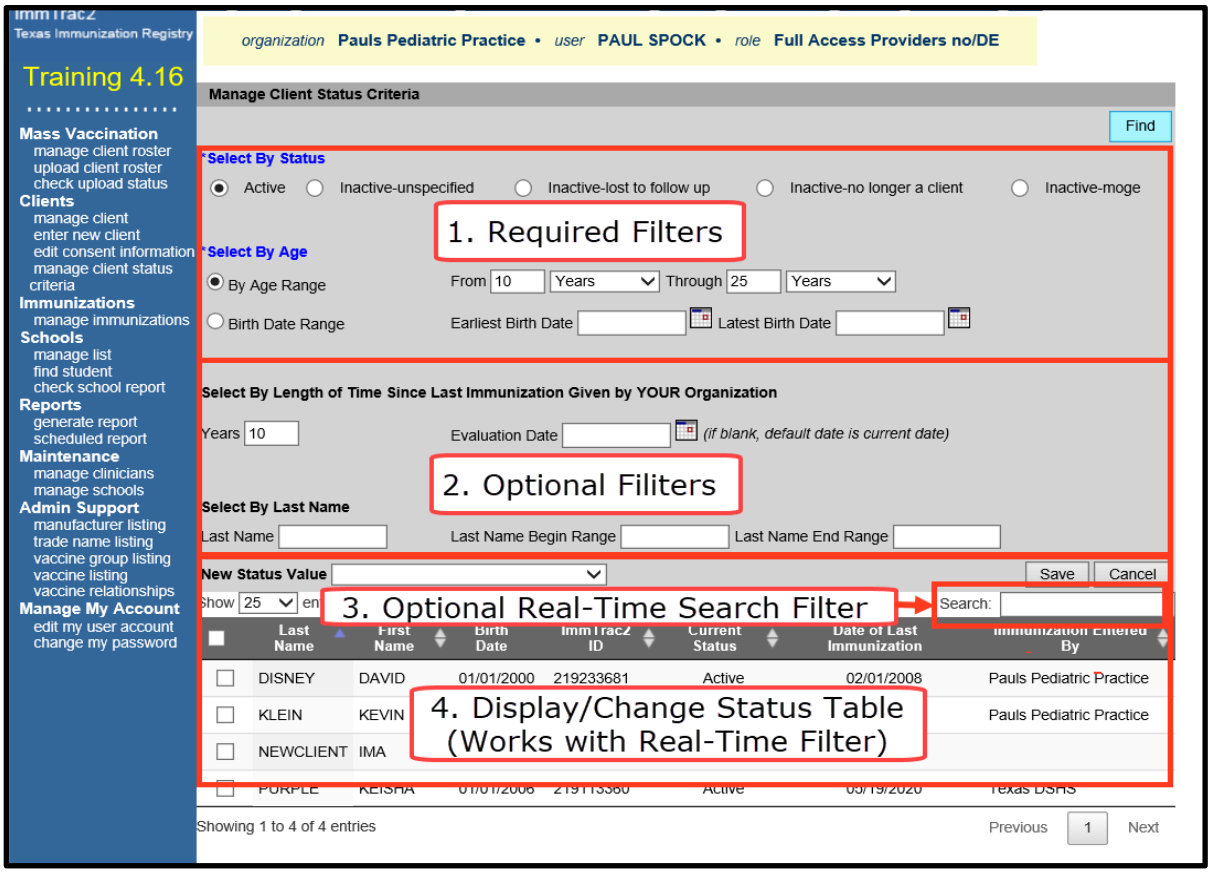


Figure 3 - The Filters and Display Table

1. Required Filters

Select by Status

See *Figure 4 – Select by Status*.

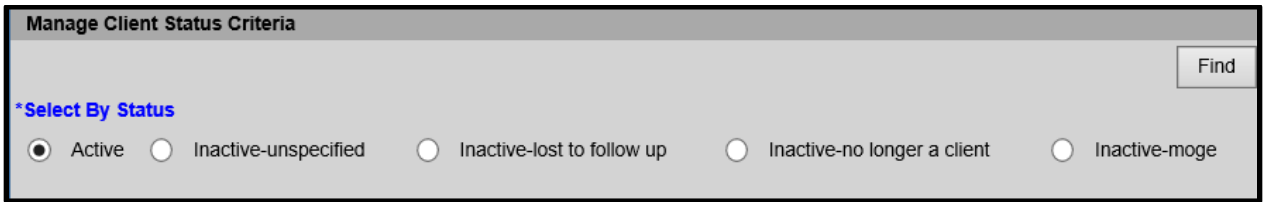


Figure 4 - Select by Status

Description of this filter - The status options below allow you to select clients that have one of the following statuses for your organization:

- Active
- Inactive – unspecified
- Inactive – lost to follow-up
- Inactive – no longer a client
- Inactive – moge (moved or gone elsewhere)

Select by Age

See *Figure 5 – Select by Age*.

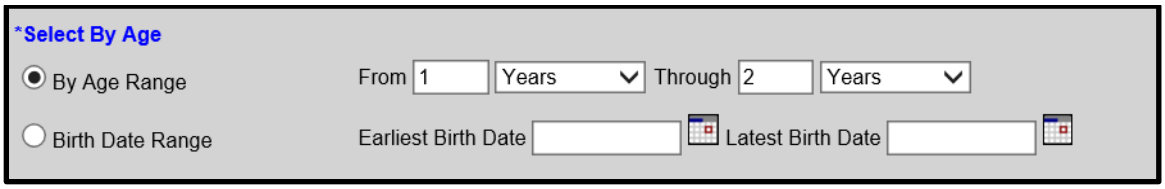


Figure 5 - Select by Age

Description of this filter:

1. By Age Range – Select clients with an age range From (years or months) Through (years or months).
2. Birth Date Range – Select clients with an Earliest Birth Date (mm/dd/yyyy format, or use the calendar) to Latest Birth Date (mm/dd/yyyy format, or use the calendar).

2. Optional Filters

Select by Length of Time Since Last Immunization Given by YOUR Organization

This is an optional filter. See *Figure 6 – Select by Length of Time Since Last Immunization*.

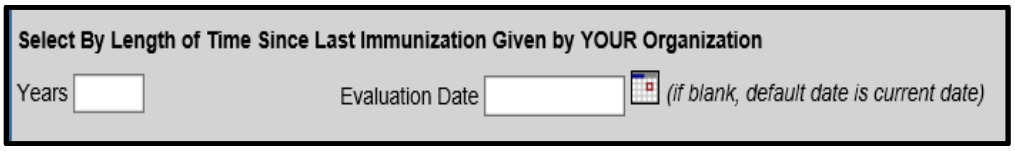


Figure 6 - Select by Length of Time Since Last Immunization

Description of this filter:

- Evaluation Date is in mm/dd/yyyy format or use the calendar.
- If you do not enter anything in the "Years" field but enter an evaluation date, an error message will popup: "You must enter the number of years if the Evaluation Date is entered" (see *Figure 7 – Error Message for Evaluation Date but No Years*).

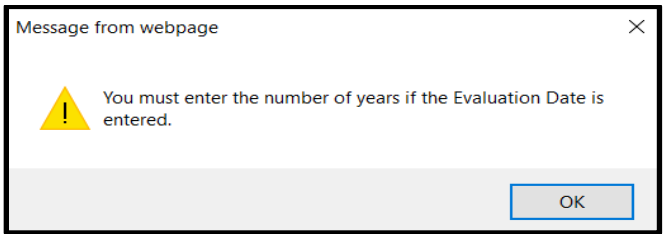


Figure 7 – Error Message for Evaluation Date but No Years

- If you do not enter anything in the Evaluation Date field, the current date is the default date.
- If you enter the number of "Years", and either enter an Evaluation Date or take the current date as the default, and then click "Find", clients who had immunizations administered **by your organization** between the Evaluation Date and going back for the number of years specified will NOT be displayed.

Select by Last Name

Select by Last Name is an optional filter. See *Figure 8 – Select by Last Name*.

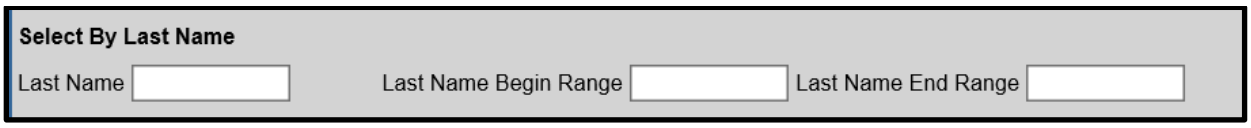


Figure 8 - Select by Last Name

Description of this filter:

- If the Last Name is entered,
  at least the first two letters of the last name are required.
- If the Last Name Begin Range is entered,
  the first 2 characters of the last name are required, and you must also enter at least 2 characters in the Last Name End Range.
- If the Last Name End Range is entered,
  the first 2 characters of the last name are required, and you must enter at least 2 characters in the Last Name Begin Range.
- Last name has priority over the Last Name Begin Range and Last Name End Range. If anything is entered into the Last Name field, it will ignore anything entered in the Last Name Begin Range and Last Name End Range fields. It will use the Last Name field instead of the range fields.
- If nothing is entered into the Last Name field and data is entered in the Last Name Begin Range and Last Name End Range fields,
  it will search using the range data.

3. Optional Real-Time Search Filter

The optional real-time search filter is used in conjunction with the Display/Change table listed below it. This filter acts differently than the other filters in that you don't have to select the "Find" button in the upper right corner of the screen to make a change in clients displayed. Instead, any characters (numbers or letters) that you enter in the search field are used to search through each and every field in the display table to find a match. If a match is found on any row in the table, then the client on that row is included in the display table; otherwise the client is no longer displayed. See *Figure 9 – Real-Time Search Filter Match.*

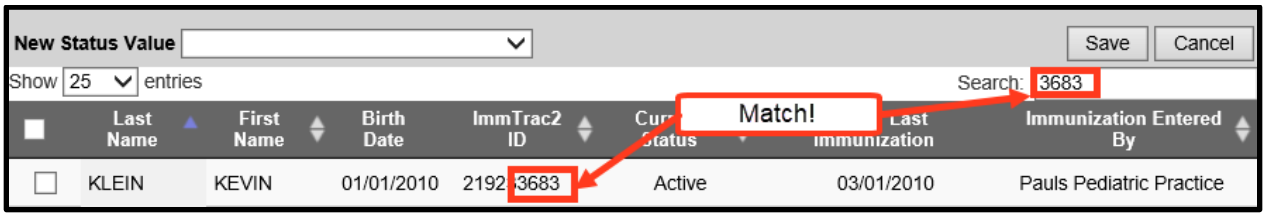
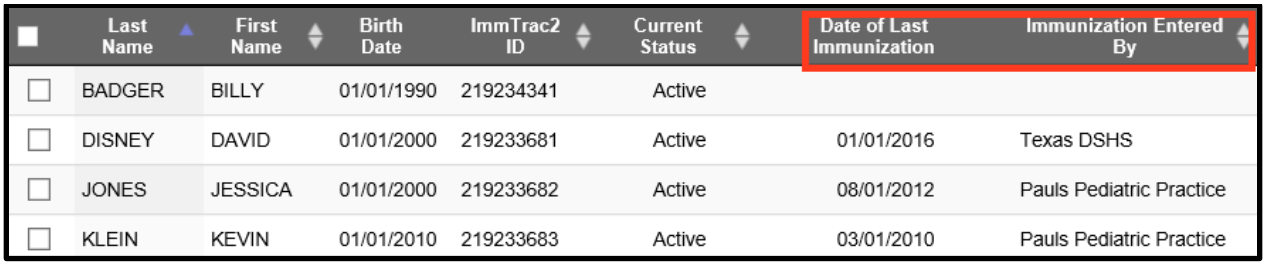


Figure 9 - Real-Time Search Filter Match

4. Display/Change Status Table

The Display/Change Status table lists all the clients of your organization and their current status in relation to your organization. The table lists all clients related to your organization that match all the selection criteria listed in the required and optional filters.

Important Note: The "Date of Last Immunization" column in the table lists the date of the last immunization given by <u>any organization</u>. To the right of that field is the column "Immunization Entered By" that lists which organization gave the last immunization that the client received. If a different organization from yours gave the last immunization that the client received, that has no effect on the filter "Select by length of time from last immunization given by YOUR organization". See *Figure 10 – Date of Last Immunization*.



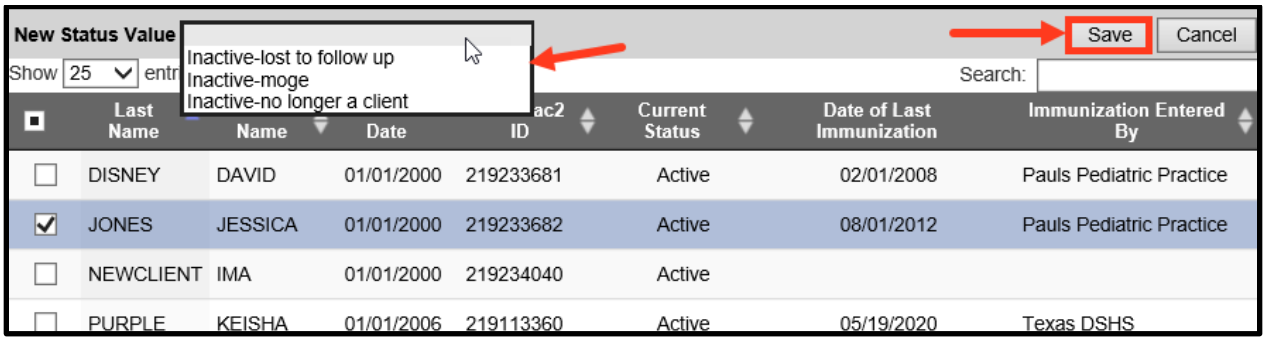
	Last Name	First Name	Birth Date	ImmTrac2 ID	Current Status	Date of Last Immunization	Immunization Entered By
☐	BADGER	BILLY	01/01/1990	219234341	Active		
☐	DISNEY	DAVID	01/01/2000	219233681	Active	01/01/2016	Texas DSHS
☐	JONES	JESSICA	01/01/2000	219233682	Active	08/01/2012	Pauls Pediatric Practice
☐	KLEIN	KEVIN	01/01/2010	219233683	Active	03/01/2010	Pauls Pediatric Practice

Figure 10 - Date of Last Immunization

You can change the status of one or more clients in the table by

1. Clicking on the selection box on the left-most column of any rows, or
2. Clicking the left-most box in the heading to select all rows (clients).

Next, select the arrow on the drop-down box in the "New Status Value" field to list possible new statuses for the clients you have selected. See *Figure 11– Drop-Down Box of New Status Value*.



	Last Name	Name	Date	ID	Current Status	Date of Last Immunization	Immunization Entered By
☐	DISNEY	DAVID	01/01/2000	219233681	Active	02/01/2008	Pauls Pediatric Practice
☑	JONES	JESSICA	01/01/2000	219233682	Active	08/01/2012	Pauls Pediatric Practice
☐	NEWCLIENT	IMA	01/01/2000	219234040	Active		
☐	PURPLE	KEISHA	01/01/2006	219113360	Active	05/19/2020	Texas DSHS

Figure 11 - Drop-Down Box of New Status Value

Select the new status for the select clients. In the above figure, Jessica Jones was selected. Then click the save button to save the new status for the selected client(s).

If you wish to select ALL the clients in the table to make a change in their status, click the box on the far left in the column header (see *Figure 12 – Select All Rows*).

☑	Last Name	First Name	Birth Date	ImmTrac2 ID	Current Status	Date of Last Immunization	Immunization Entered By
☑	BADGER	BILLY	01/01/1990	219234341	Active		
☑	DISNEY	DAVID	01/01/2000	219233681	Active	01/01/2016	Texas DSHS
☑	JONES	JESSICA	01/01/2000	219233682	Active	08/01/2012	Pauls Pediatric Practice
☑	KLEIN	KEVIN	01/01/2010	219233683	Active	03/01/2010	Pauls Pediatric Practice
☑	NEWCLIENT	IMA	01/01/2000	219234040	Active		
☑	PURPLE	KEISHA	01/01/2006	219113360	Active	05/19/2020	Texas DSHS
☑	PURPLE	KEISHA	01/01/2019	219115360	Active		
☑	SMITH	BRANDY	01/01/2010	219233460	Active	07/30/2020	Pauls Pediatric Practice

Figure 12 - Select All Rows

IQIP Resources for Providers (Handouts) Index

These resources will aid the provider in implementing the selected strategies, including factsheets, checklists, patient handouts, education opportunities, and more. The documents are grouped by most relevant strategy, but consultants and providers are encouraged to use the documents for other strategies as needed.

General Immunization Resources		
Online IQIP Resources for Providers Source: Varied Last Updated: 03/2022	This document includes links to digital campaigns and training videos to help providers with improving their vaccine communications and recommendations.	1
Advisory Committee on Immunization Practices' (ACIP) Recommended Immunization Schedule 0-18yrs Source: Centers for Disease Control and Prevention Last Updated: 2/2022	Childhood and adolescent immunization schedule (birth through 18 years). Resources for Health Care Providers. Resources for parents- including parent-friendly schedule for infants and children birth-6 years.	4
Advisory Committee on Immunization Practices' (ACIP) Recommended Immunization Schedule 19+yrs Source: Centers for Disease Control and Prevention Last Updated: 2/2022	Childhood and adolescent immunization schedule (birth through 18 years). Resources for Health Care Providers. Resources for parents- including parent-friendly schedule for infants and children birth-6 years.	14
10 Steps to Implementing Standing Orders for Immunization in Your Practice Setting Source: Immunization Action Coalition (IAC) Last Updated: 5/2020	While this guide focuses on implementing standing orders for influenza vaccination, the basic principles included can be used to implement standing orders for other vaccines and for any age group desired.	22
Using Standing Orders for Administering Vaccines: What You Should Know Source: Immunization Action Coalition (IAC) Last Updated: 12/2018	The use of standing orders for vaccination facilitates the delivery of immunization services to patients in clinics, hospitals, and community settings. Standing orders have been shown to increase vaccination coverage rates.	28
You Must Provide Patients with Vaccine Information Statements (VISs) – It's Federal Law! Source: Immunization Action Coalition (IAC) Last Updated: 2/2021	Federal law (under the National Childhood Vaccine Injury Act) requires a healthcare professional to provide a copy of the current VIS to an adult patient or to a child's parent/legal representative before vaccinating an adult or child with a dose of the following vaccines: diphtheria, tetanus, pertussis, measles, mumps, rubella, polio, hepatitis A, hepatitis B, Hemophilus influenzae type b (Hib), influenza, pneumococcal conjugate, meningococcal, rotavirus, human papillomavirus (HPV), or varicella	29
Schedule the Next Immunization Appointment		
Best Practices for scheduling immunization Source: Texas DSHS Last Updated: 7/2020	One-page flyer for improving scheduling practices at provider offices.	31
Suggestions to Improve your Immunization Services Source: Immunization Action Coalition (IAC) Last Updated: 5/2017	Handy checklist for providers to understand what gaps and areas for improvement are in their clinic's immunization processes, including increasing efficiency, maintaining competency, avoiding missed opportunities, and communicating with patients and parents.	32
Leverage IIS Functionality		
Basics of Immunization Information Systems (IIS) Source: Centers for Disease Control and Prevention Last Updated: 6/2019	Getting Started with IIS. Resources include Fact sheet of Basic IIS information, links for IIS manager trainings, and general public information.	35
EHR and IIS – Their differences and How They Work Together Source: American Immunization Registry Association (AIRA) Last Updated: 9/2019	Infographic on how EHR and IIS are different and how they can work together.	36
Give a Strong Vaccine Recommendation		
Americans' Trust in Health Information Sources: Trends and Sociodemographic Predictors Source: Health Communications Science Digest (HCSD) Last Updated: 7/2019	Article discusses assessing the public's trust in health information sources (i.e., government health agencies, doctors, family/friends, charitable organizations, and religious leaders/organizations) from 2005 to 2015 and identify socio-demographics factors associated with high trust.	37
Common immunization myths and misconceptions Source: Immunization Action Coalition (IAC) Last Updated: 7/2018	Talking points and resources for busy healthcare providers.	44
Need Help Responding to Vaccine-Hesitant Parents? Source: Immunization Action Coalition (IAC) Last Updated: 5/2019	One-pager outlining sources for science-based materials are available from these respected organizations.	54
Preparing for Questions Parents May Ask About Source: Centers for Disease Control and Prevention Last Updated: 4/2018	Provider resources for vaccine conversations with parents. Preparing for questions parents may ask about vaccines. Resources include: Vaccine schedule and number of vaccines, vaccine safety, known side effects, unknown serious, long-term side effects, vaccine ingredients, vaccines and autism, and additional	55
Provider Resources for Vaccine conversations with Parents Source: Centers for Disease Control and Prevention Last Updated: 11/2015	These materials can help assist the provider in communicating with parents to best meet their needs and concerns about vaccines.	57

IQIP Resources for Providers (Handouts) Index

How Nurses and Medical Assistants Can Foster a Culture of Immunization in the Practice Source: Centers for Disease Control and Prevention Last Updated: 12/2019	This CE activity features practical strategies to improve vaccination rates in the practice, including how to deliver clear and concise vaccine recommendations and address parents' frequently asked questions. By highlighting key points before, during, and after a patient's visit to support vaccine conversations, this presentation will reinforce best practices for improving vaccination rates. Find out how to develop a	59
Talking with Parents about Vaccines for Infants Source: Centers for Disease Control and Prevention Last Updated: 4/2018	Information for health care professionals. Resource discusses points to consider when speaking with parents about vaccines for infants.	61
Information for Health Care Professionals about Adolescent Vaccines Source: Centers for Disease Control and Prevention Last Updated: 8/2019	Factsheet on CDC recommendations for Tdap, HPV, MCV4, and Flu.	63
Top 10 ways to Improve Adolescent Immunization Rates Source: Immunization Action Coalition (IAC) Last Updated: 7/2019	Resource on how to improve adolescent immunization coverage rates.	67
Screening Won't Protect Your Patients from Most HPV Cancers Source: Centers for Disease Control and Prevention Last Updated: 8/2021	This infographic provides information to educate the whole office staff on the various cancers that HPV causes and why on-time vaccination is so important.	69
Talking to Parents about HPV Vaccine Source: Centers for Disease Control and Prevention Last Updated: 7/2019	Recommend HPV vaccination in the same way and on the same day as all adolescent vaccines. You can say, "Now that your son is 11, he is due for vaccinations today to help protect him from meningitis, HPV cancers, and whooping cough. Do you have any questions?" Remind parents of the follow-up shots their child will need and ask them to make appointments before they leave.	70
Algorithm for MenACWY Immunization in Adolescents 11-18 Years of Age Source: Immunization Action Coalition (IAC) Last Updated: 7/2021	Algorithm for providers to use during the recommendation for routine administration of MenACWY.	71
Meningococcal B Vaccine: CDC Answers Your Questions Source: Immunization Action Coalition (IAC) Last Updated: 10/2020	Resource covers Meningococcal B Vaccine availability in the U.S., recommendations, age cohort, schedule	73
Recommending MenACWY Vaccine What to Say and How to Say It Source: Immunization Action Coalition (IAC) Last Updated: 7/2019	Resource on how to improve adolescent immunization coverage for MenACWY.	75
Strengthen Vaccine Communications		
New Toolkit Resources for IQIP Consultants- October Source: Centers for Disease Control and Prevention Last Updated: 10/2021	Handout including resources for social media campaigns, marketing, overcoming vaccine hesitancies, and HPV awareness.	77
Sample Vaccine Policy Statement Source: Immunization Action Coalition (IAC) Last Updated: 8/2016	Provides a sample that can be used to help form a vaccine policy that can be shared with parents/ patients and new hires	81
Communicating the Benefits of Influenza Vaccine during COVID-19 Source: Immunization Action Coalition (IAC) Last Updated: 7/2021	Resource for providers about the benefits of flu vaccine. The one-page handout notes communications strategies that healthcare providers can use when talking to patients about getting their annual flu shot - October 2019 Meeting Recommendations.	83
Sample Vaccine Policy Source: All Pediatrics Last Updated: 7/2018	Sample vaccination policy for clinic admin staff to use to create their own policy for their clinical site	84
Handouts for Parents		
After the Shots… What to do if your child has Source: Immunization Action Coalition (IAC) Last Updated: 2/2019	Here are answers to questions many parents have after their children have been vaccinated, including common post-injection reactions and medication dosing to reduce pain and fever.	85
All Kids Need Hepatitis B Shots! Source: Immunization Action Coalition (IAC) Last Updated: 11/2017	One-pager for parents on the importance of Hep B vaccination. Information includes description of Hep B; how children contract Hep B; why Hep B is needed; infection risk; and vaccine safety.	87
Brief introduction to hep B for parents of adopted children Source: Immunization Action Coalition (IAC) Last Updated: 4/2016	Handout for parents that discusses Hepatitis B. Families adopting children from areas where hepatitis B is common should have their children tested as soon as possible after arrival in this country.	88
Chickenpox is a serious disease...make sure your child is protected Source: Immunization Action Coalition (IAC) Last Updated: 2/2020	Handout for parents that discusses chickenpox and why they should have their child vaccinated.	89
Clear answers and smart advice about your baby's shots Source: Immunization Action Coalition (IAC) Last Updated: 8/2019	In response to the recent media attention given to vaccines, autism, and other controversies concerning vaccines, the Immunization Action Coalition (IAC) offers this special excerpt from Baby 411 that answers these questions and more.	90
Measles: Questions and Answers – Information about the disease and vaccines (Parent Handout) Source: Immunization Action Coalition (IAC) Last Updated: 11/2018	One-pager on Measles including Q&As.	98

IQIP Resources for Providers (Handouts) Index

Flu Vaccine for Preteens and Teens Source: Centers for Disease Control and Prevention Last Updated: 7/2019	One-page handout for teens that lists and explains the flu vaccine. This is a great resource for patients and parents.	102
HPV is a serious disease…Make sure your child is protected! Source: Immunization Action Coalition (IAC) Last Updated: 2/2020	One-pager for parents on HPV discussing what HPV is and how to protect your child.	103
HPV Vaccine for Preteens and Teens Source: Centers for Disease Control and Prevention Last Updated: 7/2019	One-page handout for teens that lists and explains the HPV vaccine recommended for their age group. This is a great resource for patients and parents.	104
Meningococcal Vaccines for Preteens and Teens Source: Centers for Disease Control and Prevention Last Updated: 7/2019	One-page handout for teens that lists and explains the meningococcal vaccine recommended for their age group. This is a great resource for patients and parents.	106
Tdap Vaccine for Preteens and Teens Source: Centers for Disease Control and Prevention Last Updated: 7/2019	One-page handout for teens that lists and explains the Tdap vaccine recommended for their age group. This is a great resource for patients and parents.	107
Vaccines for Preteens and Teens: What Parents Should Know Source: Centers for Disease Control and Prevention Last Updated: 7/2019	One-page handout for teens that lists and explains the various vaccines they should be getting. This is a great resource for patients and parents.	108
Flu: A Guide for Parents Source: Centers for Disease Control and Prevention Last Updated: 1/2020	Informational guide for parents with information on the flu, the flu vaccine, and caring for sick children with the flu.	109
Reliable Sources of Immunization Information: Where Parents Can go to Find Answers! Source: Immunization Action Coalition (IAC) Last Updated: 5/2019	One-pager outlining sources for parents to access including: websites, books for parents, apps for mobile devices, videos, and phone numbers.	111
Top Ten Reasons to Protect Your Child by Vaccinating Source: Immunization Action Coalition (IAC) Last Updated: 8/2020	One-page handout provider staff can give to parents while recommending vaccination.	112
If You Choose Not to Vaccinate Your Child, Understand the Risks and Responsibilities Source: Centers for Disease Control and Prevention Last Updated: 3/2012	Resource for providers to give to parents regarding the risks of delaying or rejecting vaccination	113
2022 Recommended Immunizations for Children from Birth through 6 Years Old Source: Centers for Disease Control and Prevention Last Updated: 2/2022	Chart that can be used by provider's staff with guidance for vaccine scheduling for parents.	115
Immunization Guide for Babies Source: Immunization Action Coalition (IAC) Last Updated: 8/2020	Chart that can be used by provider's staff with guidance for vaccine scheduling for parents.	117
When Do Children and Teens Need Vaccinations? Source: Immunization Action Coalition (IAC) Last Updated: 5/2020	Chart that can be used by provider's staff with guidance for vaccine scheduling for parents.	118

Online IQIP Resources for Providers

Give a Strong Vaccine Recommendation		
"How I Recommend" videos for clinicians Source: Centers for Disease Control and Prevention Audience: Providers Last Updated: 09/2020	https://www.cdc.gov/hpv/hcp/how-I-recommend.html	The #HowIRecommend video series highlights clinicians like you, who explain how they are achieving high vaccination rates and effectively addressing vaccination questions in their practices. These short, informative videos cover a range of topics related to HPV, flu, and other pediatric vaccinations, including making effective recommendations to increase vaccination rates, helping parents understand why vaccination is important for their child, addressing parents' questions about vaccine safety and involving everyone in
5 Ways to Boost Your HPV Vaccination Rates Source: Centers for Disease Control and Prevention Audience: Providers Last Updated: 03/2019	https://www.cdc.gov/hpv/hcp/boosting-vacc-rates.html	Implement these practical and proven strategies and increase HPV vaccination rates. Strategies include: Bundling recommendation, ensuring consistent messages, using ever opportunity to vaccinate, providing personal examples, and effectively answering questions.
Materials for Your Office - HPV Source: Centers for Disease Control and Prevention Audience: Providers Last Updated: 03/2019	https://www.cdc.gov/hpv/hcp/educational-materials.html#office	Using CDC's educational resources is a great way to help educate yourself and your office staff on the latest information and guidance on HPV vaccination, best practices for communicating with parents, and tips for boosting your vaccination rates. Sharing these resources with office staff also helps ensure a consistent message to parents about the importance of HPV vaccination.
Coadministration- Flu Source: Immunization Action Coalition Audience: Providers Last Updated: 09/2021	https://www.immunize.org/askexperts/experts_inf.asp	Clinical considerations for co-administering flu and COVID-19 and other childhood vaccines.
Make a Strong Influenza Vaccine Recommendation Source: Centers for Disease Control and Prevention Audience: Providers Last Updated: 09/2021	https://www.cdc.gov/flu/professionals/vaccination/flu-vaccine-recommendation.htm	A health care professional's strong recommendation is a critical factor that affects whether patients get an influenza vaccine. Most adults believe vaccines are important, but they need a reminder to get vaccinated. Follow up with each patient during subsequent appointments to ensure the patient received an influenza vaccine.

Online IQIP Resources for Providers

Strengthen Vaccination Communications		
Medscape commentary featuring Dr. Messonnier: Vaccine Communication with Parents Source: Medscape Audience: Providers Last Updated: 07/2017	https://www.medscape.com/viewarticle/882865	Training resources for providers.
Foster Support for Vaccination in Your Practice Source: Centers for Disease Control and Prevention Audience: Providers Last Updated: 11/2020	https://www.cdc.gov/vaccines/hcp/conversations/your-practice.html	Patients and parents can feel more confident about vaccinating when everyone in the practice shares the same message. From the front desk to the exam room to checkout, everyone plays an important role in supporting vaccination. Adopt these best practices to ensure you never miss an opportunity to vaccinate.
Immunization Flyers and Posters Source: Centers for Disease Control and Prevention Audience: Clinic Admin Staff Last Updated: 12/2016	https://www.cdc.gov/vaccines/partners/childhood/print-ads-posters.html	Various printable/downloadable flyers and posters promoting childhood vaccination
Materials to Give Parents Source: Centers for Disease Control and Prevention Audience: Parents Last Updated: 03/2019	https://www.cdc.gov/hpv/hcp/educational-materials.html#parents	Providing educational resources to parents will help them understand the importance of vaccinating their children, answer many of their questions about vaccination, and reinforce providers recommendation.
How Vaccines Work: Videos for Parents Source: Centers for Disease Control and Prevention Audience: Parents Last Updated: 10/2015	https://www.cdc.gov/vaccines/partners/childhood/videos.html	The Parents' Guide to Childhood Immunizations helps parents and caregivers learn about the role vaccines play in helping keep children healthy. The color booklet includes a glossary and list of resources and is illustrated with children's artwork.
Repository of Resources for Maintaining Immunization During the COVID-19 Pandemic Source: Immunization Action Coalition Audience: Consultants & Providers	https://www.immunizationcoalitions.org/resource-repository/	This repository of resources is intended for use by healthcare settings, state and local health departments, professional societies, immunization coalitions, advocacy groups, and communities in their efforts to maintain immunization rates during the COVID-19 pandemic. The repository includes links to international, national, and state-level policies and guidance and advocacy materials, including talking points, webinars, press releases, media articles, and social media posts, as well as telehealth resources. The materials listed below can be sorted and searched by date, title, geographic area, source, type, category, or setting.
#CallYourPediatrician Campaign Source: American Academy of Pediatrics Audience: Providers Last Updated: 04/2021	https://www.aap.org/en-us/about-the-aap/aap-press-room/campaigns/call-your-pediatrician/Pages/default.aspx	Using humor and real-world conversations, we have launched the #CallYourPediatrician campaign, which aims to reach parents with timely reminders that going to the pediatrician, even during COVID-19, is important and safe.

Online IQIP Resources for Providers

Catch Up on Well Child Visits and Recommended Vaccinations Source: Centers for Disease Control and Prevention Audience: Parents Last Updated: 06/2021	https://www.cdc.gov/vaccines/parents/visit/v accination-during-COVID-19.html#	Online article encouraging parents to return to their doctor's office for well child visits and routine vaccinations.
CDC Flu Social Media Toolkit Source: Centers for Disease Control and Prevention Audience: Awardees & Providers Last Updated: 06/2021	https://www.cdc.gov/flu/resource-center/toolkit/social-media-toolkit.htm	CDC encourages partner organizations to use these messages on their social media platforms to encourage flu vaccination among English-speaking audiences. For these social media messages for Spanish-speaking audiences, visit: CDC Flu Social Media Toolkit (Spanish).
Influenza (Flu) Communication Resources Source: Centers for Disease Control and Prevention Audience: Providers Last Updated: 09/2021	https://www.cdc.gov/flu/resource-center/index.htm	These communication resources can be geared towards a wide audience- a health departments, hospitals, schools, community leaders, and parents.
General Immunization Resources		
Continuing Education: General Best Practice Guidelines for Immunization Source: Centers for Disease Control and Prevention Audience: Providers Last Updated: 05/2021	https://www.cdc.gov/vaccines/hcp/acip- recs/general-recs/index.html	In order to receive continuing education (CE) for WB2900 General Best Practice Guidelines for Immunization, please visit TCEO at www.cdc.gov/getCE and follow the 9 Simple Steps by 4/20/2021.
Talking About Vaccines with Dr. Stanley Plotkin Source: Association of Immunization Managers Audience: Providers Last Updated: 01/2020	https://www.youtube.com/playlist?list=PLUv9oht3hC6TqM6ubm4UfosW0U_pZq0ak	Check out the latest videos in the Vaccine Education Center at Children's Hospital of Philadelphia's new video series, Talking about Vaccines with Dr. Stanley Plotkin. In each 1- to 2-minute video, Dr. Plotkin answers a question about vaccine science.

Recommended Child and Adolescent Immunization Schedule
for ages 18 years or younger

UNITED STATES
2022

Vaccines in the Child and Adolescent Immunization Schedule*

Vaccine	Abbreviation(s)	Trade name(s)
Dengue vaccine	**DEN4CYD**	Dengvaxia®
Diphtheria, tetanus, and acellular pertussis vaccine	**DTaP**	Daptacel® Infanrix®
Diphtheria, tetanus vaccine	**DT**	No trade name
Haemophilus influenzae type b vaccine	**Hib (PRP-T)** **Hib (PRP-OMP)**	ActHIB® Hiberix® PedvaxHIB®
Hepatitis A vaccine	**HepA**	Havrix® Vaqta®
Hepatitis B vaccine	**HepB**	Engerix-B® Recombivax HB®
Human papillomavirus vaccine	**HPV**	Gardasil 9®
Influenza vaccine (inactivated)	**IIV4**	Multiple
Influenza vaccine (live, attenuated)	**LAIV4**	FluMist® Quadrivalent
Measles, mumps, and rubella vaccine	**MMR**	M-M-R II®
Meningococcal serogroups A, C, W, Y vaccine	**MenACWY-D**	Menactra®
	MenACWY-CRM	Menveo®
	MenACWY-TT	MenQuadfi®
Meningococcal serogroup B vaccine	**MenB-4C**	Bexsero®
	MenB-FHbp	Trumenba®
Pneumococcal 13-valent conjugate vaccine	**PCV13**	Prevnar 13®
Pneumococcal 23-valent polysaccharide vaccine	**PPSV23**	Pneumovax 23®
Poliovirus vaccine (inactivated)	**IPV**	IPOL®
Rotavirus vaccine	**RV1** **RV5**	Rotarix® RotaTeq®
Tetanus, diphtheria, and acellular pertussis vaccine	**Tdap**	Adacel® Boostrix®
Tetanus and diphtheria vaccine	**Td**	Tenivac® Tdvax™
Varicella vaccine	**VAR**	Varivax®
Combination vaccines *(use combination vaccines instead of separate injections when appropriate)*		
DTaP, hepatitis B, and inactivated poliovirus vaccine	**DTaP-HepB-IPV**	Pediarix®
DTaP, inactivated poliovirus, and *Haemophilus influenzae* type b vaccine	**DTaP-IPV/Hib**	Pentacel®
DTaP and inactivated poliovirus vaccine	**DTaP-IPV**	Kinrix® Quadracel®
DTaP, inactivated poliovirus, *Haemophilus influenzae* type b, and hepatitis B vaccine	**DTaP-IPV-Hib-HepB**	Vaxelis®
Measles, mumps, rubella, and varicella vaccine	**MMRV**	ProQuad®

*Administer recommended vaccines if immunization history is incomplete or unknown. Do not restart or add doses to vaccine series for extended intervals between doses. When a vaccine is not administered at the recommended age, administer at a subsequent visit. The use of trade names is for identification purposes only and does not imply endorsement by the ACIP or CDC.

How to use the child and adolescent immunization schedule

1 Determine recommended vaccine by age **(Table 1)**

2 Determine recommended interval for catch-up vaccination **(Table 2)**

3 Assess need for additional recommended vaccines by medical condition or other indication **(Table 3)**

4 Review vaccine types, frequencies, intervals, and considerations for special situations **(Notes)**

5 Review contraindications and precautions for vaccine types **(Appendix)**

Recommended by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/acip) and approved by the Centers for Disease Control and Prevention (www.cdc.gov), American Academy of Pediatrics (www.aap.org), American Academy of Family Physicians (www.aafp.org), American College of Obstetricians and Gynecologists (www.acog.org), American College of Nurse-Midwives (www.midwife.org), American Academy of Physician Associates (www.aapa.org), and National Association of Pediatric Nurse Practitioners (www.napnap.org).

Report

- Suspected cases of reportable vaccine-preventable diseases or outbreaks to your state or local health department
- Clinically significant adverse events to the Vaccine Adverse Event Reporting System (VAERS) at www.vaers.hhs.gov or 800-822-7967

Questions or comments

Contact www.cdc.gov/cdc-info or 800-CDC-INFO (800-232-4636), in English or Spanish, 8 a.m.–8 p.m. ET, Monday through Friday, excluding holidays

Download the CDC Vaccine Schedules app for providers at www.cdc.gov/vaccines/schedules/hcp/schedule-app.html

Helpful information

- Complete Advisory Committee on Immunization Practices (ACIP) recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- *General Best Practice Guidelines for Immunization* (including contraindications and precautions): www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- Vaccine information statements: www.cdc.gov/vaccines/hcp/vis/index.html
- Manual for the Surveillance of Vaccine-Preventable Diseases (including case identification and outbreak response): www.cdc.gov/vaccines/pubs/surv-manual
- ACIP Shared Clinical Decision-Making Recommendations www.cdc.gov/vaccines/acip/acip-scdm-faqs.html

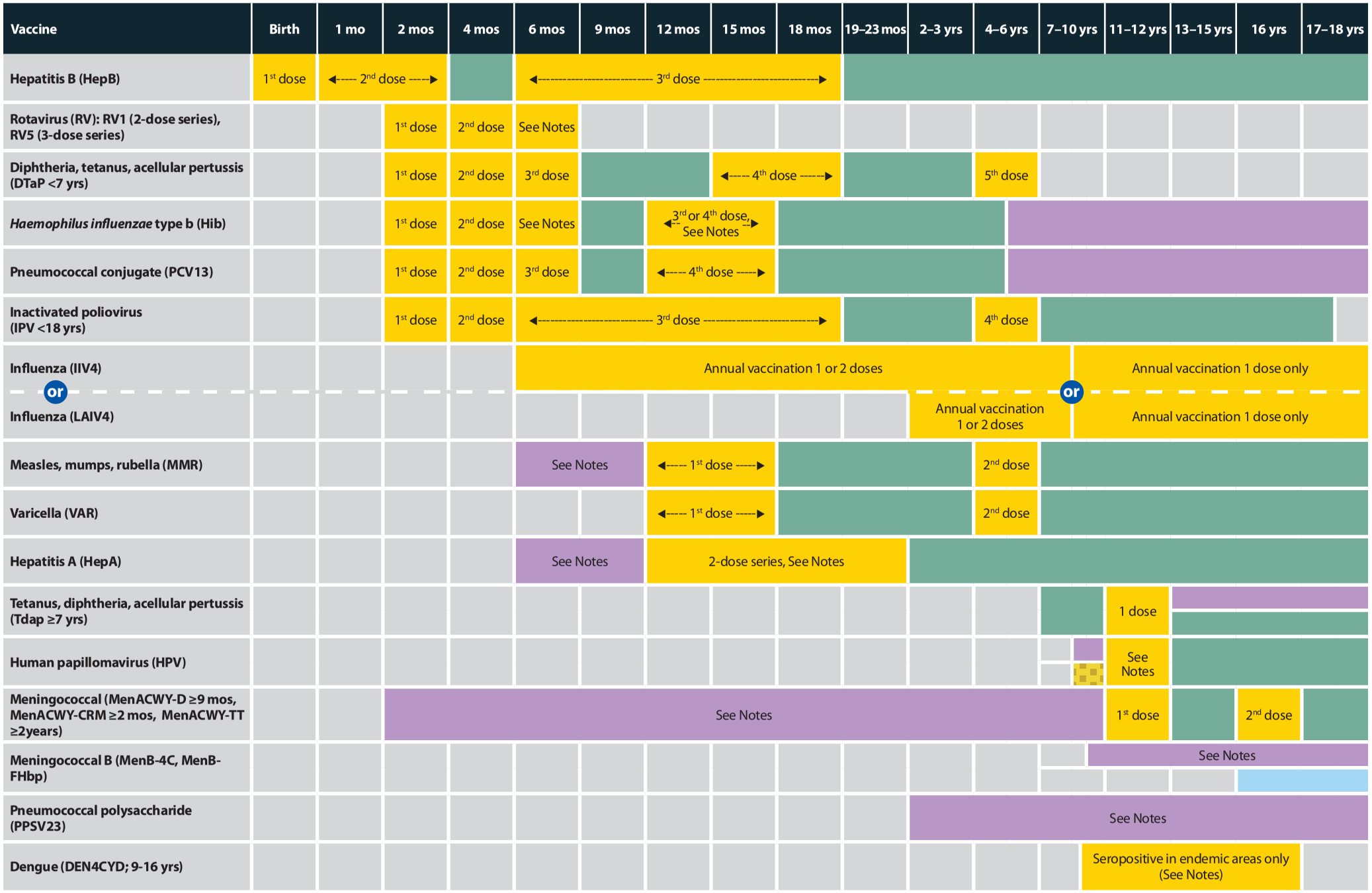
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Scan QR code for access to online schedule

CS310020-A

Table 1 Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

These recommendations must be read with the notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars.
To determine minimum intervals between doses, see the catch-up schedule (Table 2).



Range of recommended ages for all children

Range of recommended ages for catch-up vaccination

Range of recommended ages for certain high-risk groups

Recommended vaccination can begin in this age group

Recommended vaccination based on shared clinical decision-making

No recommendation/ not applicable

Table 2 Recommended Catch-up Immunization Schedule for Children and Adolescents Who Start Late or Who Are More than 1 Month Behind, United States, 2022

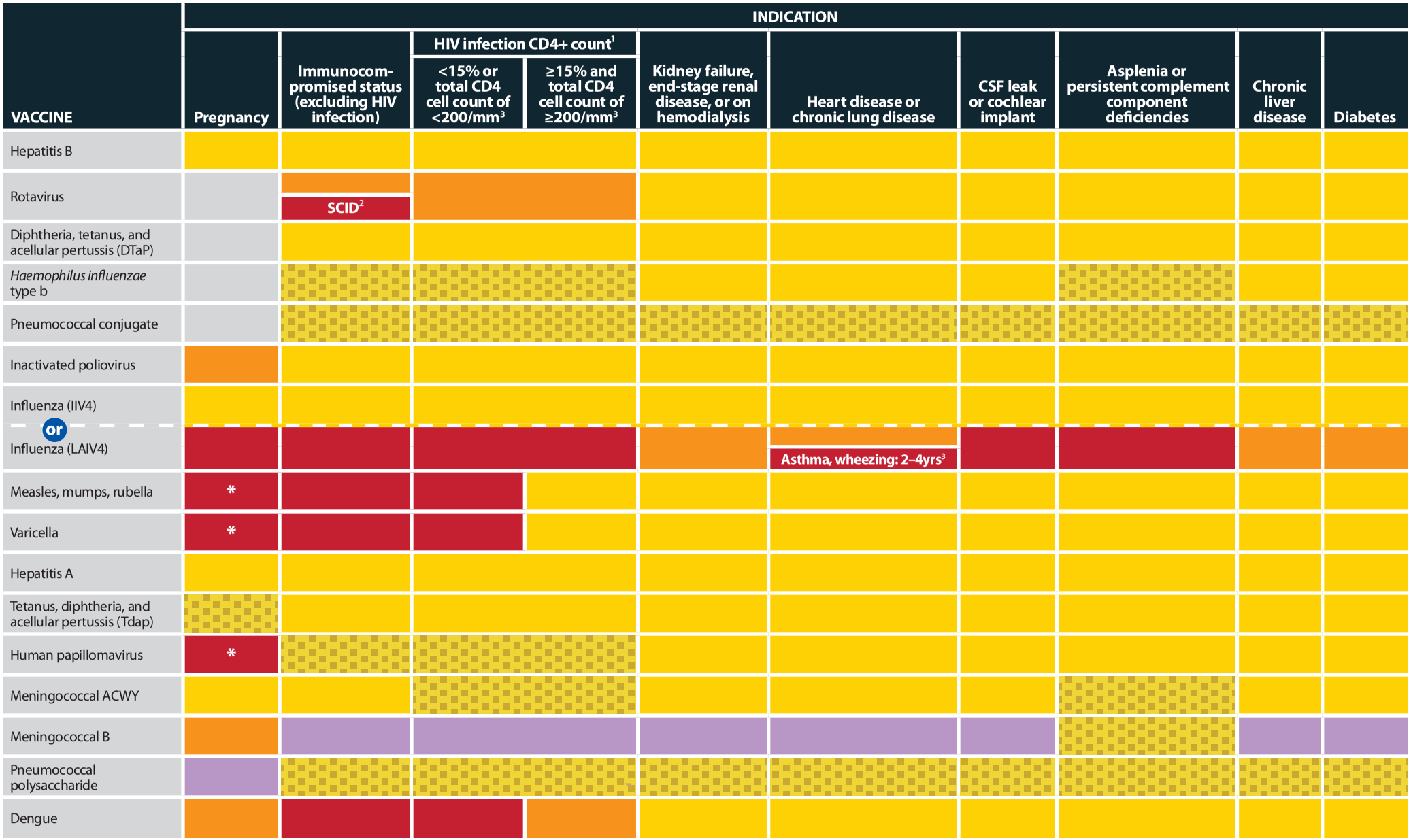
The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age. **Always use this table in conjunction with Table 1 and the Notes that follow.**

Vaccine	Minimum Age for Dose 1	Minimum Interval Between Doses			
		Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
Children age 4 months through 6 years					
Hepatitis B	Birth	**4 weeks**	**8 weeks *and* at least 16 weeks after first dose** minimum age for the final dose is 24 weeks		
Rotavirus	6 weeks Maximum age for first dose is 14 weeks, 6 days.	**4 weeks**	**4 weeks** maximum age for final dose is 8 months, 0 days		
Diphtheria, tetanus, and acellular pertussis	6 weeks	**4 weeks**	**4 weeks**	**6 months**	**6 months**
Haemophilus influenzae type b	6 weeks	**No further doses needed** if first dose was administered at age 15 months or older. **4 weeks** if first dose was administered before the 1st birthday. **8 weeks (as final dose)** if first dose was administered at age 12 through 14 months.	**No further doses needed** if previous dose was administered at age 15 months or older **4 weeks** if current age is younger than 12 months ***and*** first dose was administered at younger than age 7 months ***and*** at least 1 previous dose was PRP-T (ActHib®, Pentacel®, Hiberix®), Vaxelis® or unknown **8 weeks *and* age 12 through 59 months (as final dose)** if current age is younger than 12 months ***and*** first dose was administered at age 7 through 11 months; OR if current age is 12 through 59 months ***and*** first dose was administered before the 1st birthday ***and*** second dose was administered at younger than 15 months; OR if both doses were PedvaxHIB® and were administered before the 1st birthday	**8 weeks (as final dose)** This dose only necessary for children age 12 through 59 months who received 3 doses before the 1st birthday.	
Pneumococcal conjugate	6 weeks	**No further doses needed** for healthy children if first dose was administered at age 24 months or older **4 weeks** if first dose was administered before the 1st birthday **8 weeks (as final dose for healthy children)** if first dose was administered at the 1st birthday or after	**No further doses needed** for healthy children if previous dose was administered at age 24 months or older **4 weeks** if current age is younger than 12 months and previous dose was administered at <7 months old **8 weeks (as final dose for healthy children)** if previous dose was administered between 7–11 months (wait until at least 12 months old); OR if current age is 12 months or older and at least 1 dose was administered before age 12 months	**8 weeks (as final dose)** This dose only necessary for children age 12 through 59 months who received 3 doses before age 12 months or for children at high risk who received 3 doses at any age.	
Inactivated poliovirus	6 weeks	**4 weeks**	**4 weeks** if current age is <4 years **6 months (as final dose)** if current age is 4 years or older	**6 months (minimum age 4 years for final dose)**	
Measles, mumps, rubella	12 months	**4 weeks**			
Varicella	12 months	**3 months**			
Hepatitis A	12 months	**6 months**			
Meningococcal ACWY	2 months MenACWY-CRM 9 months MenACWY-D 2 years MenACWY-TT	**8 weeks**	See Notes	See Notes	
Children and adolescents age 7 through 18 years					
Meningococcal ACWY	Not applicable (N/A)	**8 weeks**			
Tetanus, diphtheria; tetanus, diphtheria, and acellular pertussis	7 years	**4 weeks**	**4 weeks** if first dose of DTaP/DT was administered before the 1st birthday **6 months (as final dose)** if first dose of DTaP/DT or Tdap/Td was administered at or after the 1st birthday	**6 months** if first dose of DTaP/DT was administered before the 1st birthday	
Human papillomavirus	9 years	**Routine dosing intervals are recommended.**			
Hepatitis A	N/A	**6 months**			
Hepatitis B	N/A	**4 weeks**	**8 weeks *and* at least 16 weeks after first dose**		
Inactivated poliovirus	N/A	**4 weeks**	**6 months** A fourth dose is not necessary if the third dose was administered at age 4 years or older and at least 6 months after the previous dose.	A fourth dose of IPV is indicated if all previous doses were administered at <4 years or if the third dose was administered <6 months after the second dose.	
Measles, mumps, rubella	N/A	**4 weeks**			
Varicella	N/A	**3 months** if younger than age 13 years. **4 weeks** if age 13 years or older			
Dengue	9 years	**6 months**	6 months		

Table 3

Recommended Child and Adolescent Immunization Schedule by Medical Indication, United States, 2022

Always use this table in conjunction with Table 1 and the Notes that follow.



1 For additional information regarding HIV laboratory parameters and use of live vaccines, see the *General Best Practice Guidelines for Immunization*, "Altered Immunocompetence," at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html and Table 4-1 (footnote J) at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html.

2 Severe Combined Immunodeficiency

3 LAIV4 contraindicated for children 2–4 years of age with asthma or wheezing during the preceding 12 months

Notes

For vaccination recommendations for persons ages 19 years or older, see the Recommended Adult Immunization Schedule, 2022.

Additional information

COVID-19 Vaccination

COVID-19 vaccines are recommended for use within the scope of the Emergency Use Authorization or Biologics License Application for the particular vaccine. ACIP recommendations for the use of COVID-19 vaccines can be found at www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html**.**

CDC's interim clinical considerations for use of COVID-19 vaccines can be found at www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html**.**

- Consult relevant ACIP statements for detailed recommendations at www.cdc.gov/vaccines/hcp/acip-recs/index.html.
- For calculating intervals between doses, 4 weeks = 28 days. Intervals of ≥4 months are determined by calendar months.
- Within a number range (e.g., 12–18), a dash (–) should be read as "through."
- Vaccine doses administered ≤4 days before the minimum age or interval are considered valid. Doses of any vaccine administered ≥5 days earlier than the minimum age or minimum interval should not be counted as valid and should be repeated as age appropriate. **The repeat dose should be spaced after the invalid dose by the recommended minimum interval.** For further details, see Table 3-1, Recommended and minimum ages and intervals between vaccine doses, in *General Best Practice Guidelines for Immunization* at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/timing.html.
- Information on travel vaccination requirements and recommendations is available at www.cdc.gov/travel/.
- For vaccination of persons with immunodeficiencies, see Table 8-1, Vaccination of persons with primary and secondary immunodeficiencies, in *General Best Practice Guidelines for Immunization* at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html, and Immunization in Special Clinical Circumstances (In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*. 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:67–111).
- For information about vaccination in the setting of a vaccine-preventable disease outbreak, contact your state or local health department.
- The National Vaccine Injury Compensation Program (VICP) is a no-fault alternative to the traditional legal system for resolving vaccine injury claims. All routine child and adolescent vaccines are covered by VICP except for pneumococcal polysaccharide vaccine (PPSV23). For more information, see www.hrsa.gov/vaccinecompensation/index.html.

Dengue vaccination (minimum age: 9 years)

Routine vaccination

- Age 9–16 years living in dengue endemic areas **AND** have laboratory confirmation of previous dengue infection
  - 3-dose series administered at 0, 6, and 12 months
- Endemic areas include Puerto Rico, American Samoa, US Virgin Islands, Federated States of Micronesia, Republic of Marshall Islands, and the Republic of Palau. For updated guidance on dengue endemic areas and pre-vaccination laboratory testing see www.cdc.gov/mmwr/volumes/70/rr/rr7006a1.htm?s_cid=rr7006a1_w and www.cdc.gov/dengue/vaccine/hcp/index.html

Diphtheria, tetanus, and pertussis (DTaP) vaccination (minimum age: 6 weeks [4 years for Kinrix® or Quadracel®])

Routine vaccination

- 5-dose series at age 2, 4, 6, 15–18 months, 4–6 years
  - **Prospectively:** Dose 4 may be administered as early as age 12 months if at least 6 months have elapsed since dose 3.
  - **Retrospectively:** A 4th dose that was inadvertently administered as early as age 12 months may be counted if at least 4 months have elapsed since dose 3.

Catch-up vaccination

- Dose 5 is not necessary if dose 4 was administered at age 4 years or older and at least 6 months after dose 3.
- For other catch-up guidance, see Table 2.

Special situations

- Wound management in children less than age 7 years with history of 3 or more doses of tetanus-toxoid-containing vaccine: For all wounds except clean and minor wounds, administer DTaP if more than 5 years since last dose of tetanus-toxoid-containing vaccine. For detailed information, see www.cdc.gov/mmwr/volumes/67/rr/rr6702a1.htm.

Haemophilus influenzae type b vaccination (minimum age: 6 weeks)

Routine vaccination

- **ActHIB®, Hiberix®, Pentacel®, or Vaxelis®:** 4-dose series (3 dose primary series at age 2, 4, and 6 months, followed by a booster dose* at age 12–15 months)
  - *Vaxelis® is not recommended for use as a booster dose. A different Hib-containing vaccine should be used for the booster dose.
- **PedvaxHIB®:** 3-dose series (2-dose primary series at age 2 and 4 months, followed by a booster dose at age 12–15 months)

Catch-up vaccination

- **Dose 1 at age 7–11 months:** Administer dose 2 at least 4 weeks later and dose 3 (final dose) at age 12–15 months or 8 weeks after dose 2 (whichever is later).
- **Dose 1 at age 12–14 months:** Administer dose 2 (final dose) at least 8 weeks after dose 1.
- **Dose 1 before age 12 months and dose 2 before age 15 months:** Administer dose 3 (final dose) at least 8 weeks after dose 2.
- **2 doses of PedvaxHIB® before age 12 months:** Administer dose 3 (final dose) at 12–59 months and at least 8 weeks after dose 2.
- **1 dose administered at age 15 months or older:** No further doses needed
- **Unvaccinated at age 15–59 months:** Administer 1 dose.
- **Previously unvaccinated children age 60 months or older who are not considered high risk:** Do not require catch-up vaccination

For other catch-up guidance, see Table 2. Vaxelis® can be used for catch-up vaccination in children less than age 5 years. Follow the catch-up schedule even if Vaxelis® is used for one or more doses. For detailed information on use of Vaxelis® see www.cdc.gov/mmwr/volumes/69/wr/mm6905a5.htm.

Special situations

- **Chemotherapy or radiation treatment:**
  Age 12–59 months
  - Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
  - 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

  Doses administered within 14 days of starting therapy or during therapy should be repeated at least 3 months after therapy completion.
- **Hematopoietic stem cell transplant (HSCT):**
  - 3-dose series 4 weeks apart starting 6 to 12 months after successful transplant, regardless of Hib vaccination history
- **Anatomic or functional asplenia (including sickle cell disease):**
  Age 12–59 months
  - Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
  - 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

  Unvaccinated persons age 5 years or older*
  - 1 dose
- **Elective splenectomy:**
  Unvaccinated persons age 15 months or older*
  - 1 dose (preferably at least 14 days before procedure)
- **HIV infection:**
  Age 12–59 months
  - Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
  - 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

  Unvaccinated persons age 5–18 years*
  - 1 dose
- **Immunoglobulin deficiency, early component complement deficiency:**
  Age 12–59 months
  - Unvaccinated or only 1 dose before age 12 months: 2 doses, 8 weeks apart
  - 2 or more doses before age 12 months: 1 dose at least 8 weeks after previous dose

**Unvaccinated* = Less than routine series (through age 14 months) OR no doses (age 15 months or older)*

Notes

Hepatitis A vaccination
(minimum age: 12 months for routine vaccination)

Routine vaccination
- 2-dose series (minimum interval: 6 months) at age 12–23 months

Catch-up vaccination
- Unvaccinated persons through age 18 years should complete a 2-dose series (minimum interval: 6 months).
- Persons who previously received 1 dose at age 12 months or older should receive dose 2 at least 6 months after dose 1.
- Adolescents age 18 years or older may receive the combined HepA and HepB vaccine, **Twinrix®**, as a 3-dose series (0, 1, and 6 months) or 4-dose series (3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months).

International travel
- Persons traveling to or working in countries with high or intermediate endemic hepatitis A (www.cdc.gov/travel/):
  - **Infants age 6–11 months**: 1 dose before departure; revaccinate with 2 doses, separated by at least 6 months, between age 12–23 months.
  - **Unvaccinated age 12 months or older**: Administer dose 1 as soon as travel is considered.

Hepatitis B vaccination
(minimum age: birth)

Birth dose (monovalent HepB vaccine only)
- **Mother is HBsAg-negative:**
  - **All** medically stable infants ≥2,000 grams: 1 dose within 24 hours of birth
  - Infants <2,000 grams: Administer 1 dose at chronological age 1 month or hospital discharge (whichever is earlier and even if weight is still <2,000 grams).
- **Mother is HBsAg-positive:**
  - Administer **HepB vaccine** and **hepatitis B immune globulin (HBIG)** (in separate limbs) within 12 hours of birth, regardless of birth weight. For infants <2,000 grams, administer 3 additional doses of vaccine (total of 4 doses) beginning at age 1 month.
  - Test for HBsAg and anti-HBs at age 9–12 months. If HepB series is delayed, test 1–2 months after final dose.
- **Mother's HBsAg status is unknown:**
  - Administer **HepB vaccine** within 12 hours of birth, regardless of birth weight.
  - For infants <2,000 grams, administer **HBIG** in addition to HepB vaccine (in separate limbs) within 12 hours of birth. Administer 3 additional doses of vaccine (total of 4 doses) beginning at age 1 month.
  - Determine mother's HBsAg status as soon as possible. If mother is HBsAg-positive, administer **HBIG** to infants ≥2,000 grams as soon as possible, but no later than 7 days of age.

Routine series
- 3-dose series at age 0, 1–2, 6–18 months (use monovalent HepB vaccine for doses administered before age 6 weeks)
- Infants who did not receive a birth dose should begin the series as soon as feasible (see Table 2).
- Administration of **4 doses** is permitted when a combination vaccine containing HepB is used after the birth dose.
- **Minimum age** for the final (3rd or 4th) dose: 24 weeks
- **Minimum intervals:** dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 8 weeks / dose 1 to dose 3: 16 weeks (when 4 doses are administered, substitute "dose 4" for "dose 3" in these calculations)

Catch-up vaccination
- Unvaccinated persons should complete a 3-dose series at 0, 1–2, 6 months.
- Adolescents age 11–15 years may use an alternative 2-dose schedule with at least 4 months between doses (adult formulation **Recombivax HB®** only).
- Adolescents age 18 years or older may receive a 2-dose series of HepB **(Heplisav-B®)** at least 4 weeks apart.
- Adolescents age 18 years or older may receive the combined HepA and HepB vaccine, **Twinrix®**, as a 3-dose series (0, 1, and 6 months) or 4-dose series (3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months).
- For other catch-up guidance, see Table 2.

Special situations
- Revaccination is not generally recommended for persons with a normal immune status who were vaccinated as infants, children, adolescents, or adults.
- **Post-vaccination serology testing and revaccination** (if anti-HBs < 10mIU/mL) is recommended for certain populations, including:
  - **Infants born to HBsAg-positive mothers**
  - **Hemodialysis patients**
  - **Other immunocompromised persons**

For detailed revaccination recommendations, see www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hepb.html.

Human papillomavirus vaccination
(minimum age: 9 years)

Routine and catch-up vaccination
- HPV vaccination routinely recommended at **age 11–12 years (can start at age 9 years)** and catch-up HPV vaccination recommended for all persons through age 18 years if not adequately vaccinated
- 2- or 3-dose series depending on age at initial vaccination:
  - **Age 9–14 years at initial vaccination**: 2-dose series at 0, 6–12 months (minimum interval: 5 months; repeat dose if administered too soon)
  - **Age 15 years or older at initial vaccination**: 3-dose series at 0, 1–2 months, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 12 weeks / dose 1 to dose 3: 5 months; repeat dose if administered too soon)
- **Interrupted schedules:** If vaccination schedule is interrupted, the series does not need to be restarted.
- No additional dose recommended when any HPV vaccine series has been completed using the recommended dosing intervals.

Special situations
- **Immunocompromising conditions, including HIV infection:** 3-dose series, even for those who initiate vaccination at age 9 through 14 years.
- **History of sexual abuse or assault:** Start at age 9 years.
- **Pregnancy:** Pregnancy testing not needed before vaccination; HPV vaccination not recommended until after pregnancy; no intervention needed if vaccinated while pregnant

Influenza vaccination
(minimum age: 6 months [IIV], 2 years [LAIV4], 18 years [recombinant influenza vaccine, RIV4])

Routine vaccination
- Use any influenza vaccine appropriate for age and health status annually:
  - 2 doses, separated by at least 4 weeks, for **children age 6 months–8 years** who have received fewer than 2 influenza vaccine doses before July 1, 2021, or whose influenza vaccination history is unknown (administer dose 2 even if the child turns 9 between receipt of dose 1 and dose 2)
  - 1 dose for **children age 6 months–8 years** who have received at least 2 influenza vaccine doses before July 1, 2021
  - 1 dose for **all persons age 9 years or older**
- For the 2021-2022 season, see www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm.
- For the 2022–23 season, see the 2022–23 ACIP influenza vaccine recommendations.

Special situations
- **Egg allergy, hives only**: Any influenza vaccine appropriate for age and health status annually
- **Egg allergy with symptoms other than hives** (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: see Appendix listing contraindications and precautions
- **Severe allergic reaction (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine:** see Appendix listing contraindications and precautions

Measles, mumps, and rubella vaccination
(minimum age: 12 months for routine vaccination)

Routine vaccination
- 2-dose series at age 12–15 months, age 4–6 years
- MMR or MMRV may be administered

Note: For dose 1 in children age 12–47 months, it is recommended to administer MMR and varicella vaccines separately. MMRV may be used if parents or caregivers express a preference.

Catch-up vaccination
- Unvaccinated children and adolescents: 2-dose series at least 4 weeks apart
- The maximum age for use of MMRV is 12 years.
- Minimum interval between MMRV doses: 3 months

Special situations
International travel
- **Infants age 6–11 months:** 1 dose before departure; revaccinate with 2-dose series at age 12–15 months (12 months for children in high-risk areas) and dose 2 as early as 4 weeks later.
- **Unvaccinated children age 12 months or older:** 2-dose series at least 4 weeks apart before departure

Notes

Meningococcal serogroup A,C,W,Y vaccination (minimum age: 2 months [MenACWY-CRM, Menveo], 9 months [MenACWY-D, Menactra], 2 years [MenACWY-TT, MenQuadfi])

Routine vaccination

- 2-dose series at age 11–12 years; 16 years

Catch-up vaccination

- Age 13–15 years: 1 dose now and booster at age 16–18 years (minimum interval: 8 weeks)
- Age 16–18 years: 1 dose

Special situations

Anatomic or functional asplenia (including sickle cell disease), HIV infection, persistent complement component deficiency, complement inhibitor (e.g., eculizumab, ravulizumab) use:

- **Menveo**
  - Dose 1 at age 2 months: 4-dose series (additional 3 doses at age 4, 6 and 12 months)
  - Dose 1 at age 3–6 months: 3- or 4- dose series (dose 2 [and dose 3 if applicable] at least 8 weeks after previous dose until a dose is received at age 7 months or older, followed by an additional dose at least 12 weeks later and after age 12 months)
  - Dose 1 at age 7–23 months: 2-dose series (dose 2 at least 12 weeks after dose 1 and after age 12 months)
  - Dose 1 at age 24 months or older: 2-dose series at least 8 weeks apart
- **Menactra**
  - **Persistent complement component deficiency or complement inhibitor use:**
    - Age 9–23 months: 2-dose series at least 12 weeks apart
    - Age 24 months or older: 2-dose series at least 8 weeks apart
  - **Anatomic or functional asplenia, sickle cell disease, or HIV infection:**
    - Age 9–23 months: Not recommended
    - Age 24 months or older: 2-dose series at least 8 weeks apart
    - **Menactra®** must be administered at least 4 weeks after completion of PCV13 series.
- **MenQuadfi®**
  - Dose 1 at age 24 months or older: 2-dose series at least 8 weeks apart

Travel in countries with hyperendemic or epidemic meningococcal disease, including countries in the African meningitis belt or during the Hajj (www.cdc.gov/travel/)**:**

- Children less than age 24 months:
  - **Menveo® (age 2–23 months)**
    - Dose 1 at age 2 months: 4-dose series (additional 3 doses at age 4, 6 and 12 months)
    - Dose 1 at age 3–6 months: 3- or 4- dose series (dose 2 [and dose 3 if applicable] at least 8 weeks after previous dose until a dose is received at age 7 months or older, followed by an additional dose at least 12 weeks later and after age 12 months)
    - Dose 1 at age 7–23 months: 2-dose series (dose 2 at least 12 weeks after dose 1 and after age 12 months)
  - **Menactra® (age 9–23 months)**
    - 2-dose series (dose 2 at least 12 weeks after dose 1; dose 2 may be administered as early as 8 weeks after dose 1 in travelers)
- Children age 2 years or older: 1 dose Menveo®, Menactra®, or MenQuadfi®

First-year college students who live in residential housing (if not previously vaccinated at age 16 years or older) or military recruits:

- 1 dose **Menveo®, Menactra®,** or **MenQuadfi®**

Adolescent vaccination of children who received MenACWY prior to age 10 years:

- **Children for whom boosters are recommended** because of an ongoing increased risk of meningococcal disease (e.g., those with complement deficiency, HIV, or asplenia): Follow the booster schedule for persons at increased risk.
- **Children for whom boosters are not recommended** (e.g., a healthy child who received a single dose for travel to a country where meningococcal disease is endemic): Administer MenACWY according to the recommended adolescent schedule with dose 1 at age 11–12 years and dose 2 at age 16 years.

Note: Menactra® should be administered either before or at the same time as DTaP. MenACWY vaccines may be administered simultaneously with MenB vaccines if indicated, but at a different anatomic site, if feasible.

For MenACWY **booster dose recommendations** for groups listed under "Special situations" and in an outbreak setting and additional meningococcal vaccination information, see www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm.

Meningococcal serogroup B vaccination (minimum age: 10 years [MenB-4C, Bexsero®; MenB-FHbp, Trumenba®])

Shared clinical decision-making

- **Adolescents not at increased risk** age 16–23 years (preferred age 16–18 years) based on shared clinical decision-making:
  - **Bexsero®:** 2-dose series at least 1 month apart
  - **Trumenba®:** 2-dose series at least 6 months apart; if dose 2 is administered earlier than 6 months, administer a 3rd dose at least 4 months after dose 2.

Special situations

Anatomic or functional asplenia (including sickle cell disease), persistent complement component deficiency, complement inhibitor (e.g., eculizumab, ravulizumab) use:

- **Bexsero®:** 2-dose series at least 1 month apart
- **Trumenba®:** 3-dose series at 0, 1–2, 6 months

Note: Bexsero® and **Trumenba®** are not interchangeable; the same product should be used for all doses in a series.

For MenB **booster dose recommendations** for groups listed under "Special situations" and in an outbreak setting and additional meningococcal vaccination information, see www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm.

Pneumococcal vaccination (minimum age: 6 weeks [PCV13], 2 years [PPSV23])

Routine vaccination with PCV13

- 4-dose series at age 2, 4, 6, 12–15 months

Catch-up vaccination with PCV13

- 1 dose for healthy children age 24–59 months with any incomplete* PCV13 series
- For other catch-up guidance, see Table 2.

Special situations

Underlying conditions below: When both PCV13 and PPSV23 are indicated, administer PCV13 first. PCV13 and PPSV23 should not be administered during same visit.

Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); chronic lung disease (including asthma treated with high-dose, oral corticosteroids); diabetes mellitus:

Age 2–5 years

- Any incomplete* series with:
  - 3 PCV13 doses: 1 dose PCV13 (at least 8 weeks after any prior PCV13 dose)
  - Less than 3 PCV13 doses: 2 doses PCV13 (8 weeks after the most recent dose and administered 8 weeks apart)
- No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after completing all recommended PCV13 doses)

Age 6–18 years

- No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after completing all recommended PCV13 doses)

Cerebrospinal fluid leak, cochlear implant:

Age 2–5 years

- Any incomplete* series with:
  - 3 PCV13 doses: 1 dose PCV13 (at least 8 weeks after any prior PCV13 dose)
  - Less than 3 PCV13 doses: 2 doses PCV13 (8 weeks after the most recent dose and administered 8 weeks apart)
- No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after any prior PCV13 dose)

Age 6–18 years

- No history of either PCV13 or PPSV23: 1 dose PCV13, 1 dose PPSV23 at least 8 weeks later
- Any PCV13 but no PPSV23: 1 dose PPSV23 at least 8 weeks after the most recent dose of PCV13
- PPSV23 but no PCV13: 1 dose PCV13 at least 8 weeks after the most recent dose of PPSV23

Sickle cell disease and other hemoglobinopathies; anatomic or functional asplenia; congenital or acquired immunodeficiency; HIV infection; chronic renal failure; nephrotic syndrome; malignant neoplasms, leukemias, lymphomas, Hodgkin disease, and other diseases associated with treatment with immunosuppressive drugs or radiation therapy; solid organ transplantation; multiple myeloma:

Age 2–5 years

- Any incomplete* series with:
  - 3 PCV13 doses: 1 dose PCV13 (at least 8 weeks after any prior PCV13 dose)
  - Less than 3 PCV13 doses: 2 doses PCV13 (8 weeks after the most recent dose and administered 8 weeks apart)
- No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after any prior PCV13 dose) and a dose 2 of PPSV23 5 years later

Age 6–18 years

- No history of either PCV13 or PPSV23: 1 dose PCV13, 2 doses PPSV23 (dose 1 of PPSV23 administered 8 weeks after PCV13 and dose 2 of PPSV23 administered at least 5 years after dose 1 of PPSV23)
- Any PCV13 but no PPSV23: 2 doses PPSV23 (dose 1 of PPSV23 administered 8 weeks after the most recent dose of PCV13 and dose 2 of PPSV23 administered at least 5 years after dose 1 of PPSV23)
- PPSV23 but no PCV13: 1 dose PCV13 at least 8 weeks after the most recent PPSV23 dose and a dose 2 of PPSV23 administered 5 years after dose 1 of PPSV23 and at least 8 weeks after a dose of PCV13

Chronic liver disease, alcoholism:
Age 6–18 years
- No history of PPSV23: 1 dose PPSV23 (at least 8 weeks after any prior PCV13 dose)

**Incomplete series* = Not having received all doses in either the recommended series or an age-appropriate catch-up series See Tables 8, 9, and 11 in the ACIP pneumococcal vaccine recommendations (www.cdc.gov/mmwr/pdf/rr/rr5911.pdf) for complete schedule details.

Poliovirus vaccination (minimum age: 6 weeks)

Routine vaccination
- 4-dose series at ages 2, 4, 6–18 months, 4–6 years; administer the final dose on or after age 4 years and at least 6 months after the previous dose.
- 4 or more doses of IPV can be administered before age 4 years when a combination vaccine containing IPV is used. However, a dose is still recommended on or after age 4 years and at least 6 months after the previous dose.

Catch-up vaccination
- In the first 6 months of life, use minimum ages and intervals only for travel to a polio-endemic region or during an outbreak.
- IPV is not routinely recommended for U.S. residents age 18 years or older.

Series containing oral polio vaccine (OPV), either mixed OPV-IPV or OPV-only series:
- Total number of doses needed to complete the series is the same as that recommended for the U.S. IPV schedule. See www.cdc.gov/mmwr/volumes/66/wr/mm6601a6.htm?s_%20cid=mm6601a6_w.
- Only trivalent OPV (tOPV) counts toward the U.S. vaccination requirements.
  - Doses of OPV administered before April 1, 2016, should be counted (unless specifically noted as administered during a campaign).
  - Doses of OPV administered on or after April 1, 2016, should not be counted.
  - For guidance to assess doses documented as "OPV," see www.cdc.gov/mmwr/volumes/66/wr/mm6606a7.htm?s_cid=mm6606a7_w.
- For other catch-up guidance, see Table 2.

Rotavirus vaccination (minimum age: 6 weeks)

Routine vaccination
- **Rotarix®:** 2-dose series at age 2 and 4 months
- **RotaTeq®:** 3-dose series at age 2, 4, and 6 months
- If any dose in the series is either **RotaTeq®** or unknown, default to 3-dose series.

Catch-up vaccination
- Do not start the series on or after age 15 weeks, 0 days.
- The maximum age for the final dose is 8 months, 0 days.
- For other catch-up guidance, see Table 2.

Tetanus, diphtheria, and pertussis (Tdap) vaccination (minimum age: 11 years for routine vaccination, 7 years for catch-up vaccination)

Routine vaccination
- **Adolescents age 11–12 years:** 1 dose Tdap
- **Pregnancy:** 1 dose Tdap during each pregnancy, preferably in early part of gestational weeks 27–36.
- Tdap may be administered regardless of the interval since the last tetanus- and diphtheria-toxoid-containing vaccine.

Catch-up vaccination
- **Adolescents age 13–18 years who have not received Tdap:** 1 dose Tdap, then Td or Tdap booster every 10 years
- **Persons age 7–18 years not fully vaccinated* with DTaP:** 1 dose Tdap as part of the catch-up series (preferably the first dose); if additional doses are needed, use Td or Tdap.
- **Tdap administered at age 7–10 years:**
  - **Children age 7–9 years** who receive Tdap should receive the routine Tdap dose at age 11–12 years.
  - **Children age 10 years** who receive Tdap do not need the routine Tdap dose at age 11–12 years.
- **DTaP inadvertently administered on or after age 7 years**:
  - **Children age 7–9 years**: DTaP may count as part of catch-up series. Administer routine Tdap dose at age 11–12 years.
  - **Children age 10–18 years**: Count dose of DTaP as the adolescent Tdap booster.
- For other catch-up guidance, see Table 2.

Special situations
- **Wound management** in persons age 7 years or older with history of 3 or more doses of tetanus-toxoid-containing vaccine: For clean and minor wounds, administer Tdap or Td if more than 10 years since last dose of tetanus-toxoid-containing vaccine; for all other wounds, administer Tdap or Td if more than 5 years since last dose of tetanus-toxoid-containing vaccine. Tdap is preferred for persons age 11 years or older who have not previously received Tdap or whose Tdap history is unknown. If a tetanus-toxoid-containing vaccine is indicated for a pregnant adolescent, use Tdap.
- For detailed information, see www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm.

**Fully vaccinated* = 5 valid doses of DTaP OR 4 valid doses of DTaP if dose 4 was administered at age 4 years or older

Varicella vaccination (minimum age: 12 months)

Routine vaccination
- 2-dose series at age 12–15 months, 4–6 years
- VAR or MMRV may be administered*
- Dose 2 may be administered as early as 3 months after dose 1 (a dose inadvertently administered after at least 4weeks may be counted as valid)

*****Note****: For dose 1 in children age 12–47 months, it is recommended to administer MMR and varicella vaccines separately. MMRV may be used if parents or caregivers express a preference.

Catch-up vaccination
- Ensure persons age 7–18 years without evidence of immunity (see *MMWR* at www.cdc.gov/mmwr/pdf/rr/rr5604.pdf) have a 2-dose series:
  - **Age 7–12 years**: routine interval: 3 months (a dose inadvertently administered after at least 4 weeks may be counted as valid)
  - **Age 13 years and older**: routine interval: 4–8 weeks (minimum interval: 4 weeks)
  - The maximum age for use of MMRV is 12 years.

Appendix Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

Guide to Contraindications and Precautions to Commonly Used Vaccines

Adapted from Table 4-1 in Advisory Committee on Immunization Practices (ACIP) General Best Practice Guidelines for Immunization: Contraindication and Precautions available at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html *and ACIP's Recommendations for the Prevention and Control of 2021-22 seasonal influenza with Vaccines available at* www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm.

Interim clinical considerations for use of COVID-19 vaccines including contraindications and precautions can be found at
www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

Vaccine	Contraindications[1]	Precautions[2]
Influenza, egg-based, inactivated injectable (IIV4)	• Severe allergic reaction (e.g., anaphylaxis) after previous dose of any influenza vaccine (i.e., any egg-based IIV, ccIIV, RIV, or LAIV of any valency) • Severe allergic reaction (e.g., anaphylaxis) to any vaccine component[3] (excluding egg)	• Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine • Persons with egg allergy with symptoms other than hives (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: Any influenza vaccine appropriate for age and health status may be administered. If using egg-based IIV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist. • Moderate or severe acute illness with or without fever
Influenza, cell culture-based inactivated injectable [(ccIIV4), Flucelvax® Quadrivalent]	• Severe allergic reaction (e.g., anaphylaxis) to any ccIIV of any valency, or to any component[3] of ccIIV4	• Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine • Persons with a history of severe allergic reaction (e.g., anaphylaxis) after a previous dose of any egg-based IIV, RIV, or LAIV of any valency. If using ccIV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist. • Moderate or severe acute illness with or without fever
Influenza, recombinant injectable [(RIV4), Flublok® Quadrivalent]	• Severe allergic reaction (e.g., anaphylaxis) to any RIV of any valency, or to any component[3] of RIV4	• Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine • Persons with a history of severe allergic reaction (e.g., anaphylaxis) after a previous dose of any egg- based IIV, ccIIV, or LAIV of any valency. If using RIV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist. • Moderate or severe acute illness with or without fever
Influenza, live attenuated [LAIV4, Flumist® Quadrivalent]	• Severe allergic reaction (e.g., anaphylaxis) after previous dose of any influenza vaccine (i.e., any egg-based IIV, ccIIV, RIV, or LAIV of any valency) • Severe allergic reaction (e.g., anaphylaxis) to any vaccine component[3] (excluding egg) • Children age 2 – 4 years with a history of asthma or wheezing • Anatomic or functional asplenia • Immunocompromised due to any cause including, but not limited to, medications and HIV infection • Close contacts or caregivers of severely immunosuppressed persons who require a protected environment • Pregnancy • Cochlear implant • Active communication between the cerebrospinal fluid (CSF) and the oropharynx, nasopharynx, nose, ear or any other cranial CSF leak • Children and adolescents receiving aspirin or salicylate-containing medications • Received influenza antiviral medications oseltamivir or zanamivir within the previous 48 hours, peramivir within the previous 5 days, or baloxavir within the previous 17 days	• Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine • Asthma in persons aged 5 years old or older • Persons with egg allergy with symptoms other than hives (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: Any influenza vaccine appropriate for age and health status may be administered. If using LAIV4 (which is egg based), administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist. • Persons with underlying medical conditions (other than those listed under contraindications) that might predispose to complications after wild-type influenza virus infection [e.g., chronic pulmonary, cardiovascular (except isolated hypertension), renal, hepatic, neurologic, hematologic, or metabolic disorders (including diabetes mellitus)] • Moderate or severe acute illness with or without fever

1. When a contraindication is present, a vaccine should NOT be administered. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html
2. When a precaution is present, vaccination should generally be deferred but might be indicated if the benefit of protection from the vaccine outweighs the risk for an adverse reaction. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html
3. Vaccination providers should check FDA-approved prescribing information for the most complete and updated information, including contraindications, warnings, and precautions. Package inserts for U.S.-licensed vaccines are available at www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states

Appendix

Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

Vaccine	Contraindications[1]	Precautions[2]
Dengue (DEN4CYD)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • Severe immunodeficiency (e.g., hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, long- term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised)	• Pregnancy • HIV infection without evidence of severe immunosuppression • Moderate or severe acute illness with or without fever
Diphtheria, tetanus, pertussis (DTaP) Tetanus, diphtheria (DT)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • For DTaP only: Encephalopathy (e.g., coma, decreased level of consciousness, prolonged seizures) not attributable to another identifiable cause within 7 days of administration of previous dose of DTP or DTaP	• Guillain-Barré syndrome (GBS) within 6 weeks after previous dose of tetanus-toxoid–containing vaccine • History of Arthus-type hypersensitivity reactions after a previous dose of diphtheria-toxoid— containing or tetanus-toxoid– containing vaccine; defer vaccination until at least 10 years have elapsed since the last tetanus-toxoid- containing vaccine • For DTaP only: Progressive neurologic disorder, including infantile spasms, uncontrolled epilepsy, progressive encephalopathy; defer DTaP until neurologic status clarified and stabilized • Moderate or severe acute illness with or without fever
Haemophilus influenzae type b (Hib)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • For Hiberix, ActHib, and PedvaxHIB only: History of severe allergic reaction to dry natural latex • Less than age 6 weeks	• Moderate or severe acute illness with or without fever
Hepatitis A (HepA)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] including neomycin	• Moderate or severe acute illness with or without fever
Hepatitis B (HepB)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] including yeast • For Heplisav-B only: Pregnancy	• Moderate or severe acute illness with or without fever
Hepatitis A- Hepatitis B vaccine [HepA-HepB, (Twinrix®)]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] including neomycin and yeast	• Moderate or severe acute illness with or without fever
Human papillomavirus (HPV)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3]	• Moderate or severe acute illness with or without fever
Measles, mumps, rubella (MMR)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • Severe immunodeficiency (e.g., hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, long-term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised) • Pregnancy • Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent	• Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product) • History of thrombocytopenia or thrombocytopenic purpura • Need for tuberculin skin testing or interferon-gamma release assay (IGRA) testing • Moderate or severe acute illness with or without fever
Meningococcal ACWY (MenACWY) [MenACWY-CRM (Menveo®); MenACWY-D (Menactra®); MenACWY-TT (MenQuadfi®)]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • For MenACWY-D and Men ACWY-CRM only: severe allergic reaction to any diphtheria toxoid– or CRM197–containing vaccine • For MenACWY-TT only: severe allergic reaction to a tetanus toxoid-containing vaccine	• For MenACWY-CRM only: Preterm birth if less than age 9 months • Moderate or severe acute illness with or without fever
Meningococcal B (MenB) [MenB-4C (Bexsero®); MenB-FHbp (Trumenba®)]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3]	• Pregnancy • For MenB-4C only: Latex sensitivity • Moderate or severe acute illness with or without fever
Pneumococcal conjugate (PCV13)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • Severe allergic reaction (e.g., anaphylaxis) to any diphtheria-toxoid– containing vaccine or its component[3]	• Moderate or severe acute illness with or without fever
Pneumococcal polysaccharide (PPSV23)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3]	• Moderate or severe acute illness with or without fever
Poliovirus vaccine, inactivated (IPV)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3]	• Pregnancy • Moderate or severe acute illness with or without fever
Rotavirus (RV) [RV1 (Rotarix®), RV5 (RotaTeq®)]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • Severe combined immunodeficiency (SCID) • History of intussusception	• Altered immunocompetence other than SCID • Chronic gastrointestinal disease • RV1 only: Spina bifida or bladder exstrophy • Moderate or severe acute illness with or without fever
Tetanus, diphtheria, and acellular pertussis (Tdap) Tetanus, diphtheria (Td)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • For Tdap only: Encephalopathy (e.g., coma, decreased level of consciousness, prolonged seizures) not attributable to another identifiable cause within 7 days of administration of previous dose of DTP, DTaP, or Tdap	• Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of tetanus-toxoid–containing vaccine • History of Arthus-type hypersensitivity reactions after a previous dose of diphtheria-toxoid— containing or tetanus-toxoid– containing vaccine; defer vaccination until at least 10 years have elapsed since the last tetanus-toxoid– containing vaccine • For Tdap only: Progressive or unstable neurological disorder, uncontrolled seizures, or progressive encephalopathy until a treatment regimen has been established and the condition has stabilized • Moderate or severe acute illness with or without fever
Varicella (VAR)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • Severe immunodeficiency (e.g., hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, long- term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised) • Pregnancy • Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent	• Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product) • Receipt of specific antiviral drugs (acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination (avoid use of these antiviral drugs for 14 days after vaccination) • Use of aspirin or aspirin-containing products • Moderate or severe acute illness with or without fever

1. When a contraindication is present, a vaccine should NOT be administered. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html
2. When a precaution is present, vaccination should generally be deferred but might be indicated if the benefit of protection from the vaccine outweighs the risk for an adverse reaction. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html
3. Vaccination providers should check FDA-approved prescribing information for the most complete and updated information, including contraindications, warnings, and precautions. Package inserts for U.S.-licensed vaccines are available at www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states.

Recommended Adult Immunization Schedule
for ages 19 years or older

UNITED STATES
2022

How to use the adult immunization schedule

1 Determine recommended vaccinations by age **(Table 1)**

2 Assess need for additional recommended vaccinations by medical condition or other indication **(Table 2)**

3 Review vaccine types, frequencies, intervals, and considerations for special situations **(Notes)**

4 Review contraindications and precautions for vaccine types **(Appendix)**

Vaccines in the Adult Immunization Schedule*

Vaccine	Abbreviation(s)	Trade name(s)
Haemophilus influenzae type b vaccine	Hib	ActHIB® Hiberix® PedvaxHIB®
Hepatitis A vaccine	HepA	Havrix® Vaqta®
Hepatitis A and hepatitis B vaccine	HepA-HepB	Twinrix®
Hepatitis B vaccine	HepB	Engerix-B® Recombivax HB® Heplisav-B®
Human papillomavirus vaccine	HPV	Gardasil 9®
Influenza vaccine (inactivated)	IIV4	Many brands
Influenza vaccine (live, attenuated)	LAIV4	FluMist® Quadrivalent
Influenza vaccine (recombinant)	RIV4	Flublok® Quadrivalent
Measles, mumps, and rubella vaccine	MMR	M-M-R II®
Meningococcal serogroups A, C, W, Y vaccine	MenACWY-D MenACWY-CRM MenACWY-TT	Menactra® Menveo® MenQuadfi®
Meningococcal serogroup B vaccine	MenB-4C MenB-FHbp	Bexsero® Trumenba®
Pneumococcal 15-valent conjugate vaccine	PCV15	Vaxneuvance™
Pneumococcal 20-valent conjugate vaccine	PCV20	Prevnar 20™
Pneumococcal 23-valent polysaccharide vaccine	PPSV23	Pneumovax 23®
Tetanus and diphtheria toxoids	Td	Tenivac® Tdvax™
Tetanus and diphtheria toxoids and acellular pertussis vaccine	Tdap	Adacel® Boostrix®
Varicella vaccine	VAR	Varivax®
Zoster vaccine, recombinant	RZV	Shingrix

*Administer recommended vaccines if vaccination history is incomplete or unknown. Do not restart or add doses to vaccine series if there are extended intervals between doses. The use of trade names is for identification purposes only and does not imply endorsement by the ACIP or CDC.

Recommended by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/acip) and approved by the Centers for Disease Control and Prevention (www.cdc.gov), American College of Physicians (www.acponline.org), American Academy of Family Physicians (www.aafp.org), American College of Obstetricians and Gynecologists (www.acog.org), American College of Nurse-Midwives (www.midwife.org), and American Academy of Physician Associates (www.aapa.org), and Society for Healthcare Epidemiology of America (www.shea-online.org).

Report

- Suspected cases of reportable vaccine-preventable diseases or outbreaks to the local or state health department
- Clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System at www.vaers.hhs.gov or 800-822-7967

Injury claims

All vaccines included in the adult immunization schedule except pneumococcal 23-valent polysaccharide (PPSV23) and zoster (RZV) vaccines are covered by the Vaccine Injury Compensation Program. Information on how to file a vaccine injury claim is available at www.hrsa.gov/vaccinecompensation.

Questions or comments

Contact www.cdc.gov/cdc-info or 800-CDC-INFO (800-232-4636), in English or Spanish, 8 a.m.–8 p.m. ET, Monday through Friday, excluding holidays.

Download the CDC Vaccine Schedules app for providers at www.cdc.gov/vaccines/schedules/hcp/schedule-app.html.

Helpful information

- Complete Advisory Committee on Immunization Practices (ACIP) recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- *General Best Practice Guidelines for Immunization* (including contraindications and precautions): www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- Vaccine information statements: www.cdc.gov/vaccines/hcp/vis/index.html
- Manual for the Surveillance of Vaccine-Preventable Diseases (including case identification and outbreak response): www.cdc.gov/vaccines/pubs/surv-manual
- Travel vaccine recommendations: www.cdc.gov/travel
- Recommended Child and Adolescent Immunization Schedule, United States, 2022: www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html
- ACIP Shared Clinical Decision-Making Recommendations: www.cdc.gov/vaccines/acip/acip-scdm-faqs.html

Scan QR code for access to online schedule

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

CS310021-A

Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2022

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Influenza inactivated (IIV4) or **Influenza recombinant** (RIV4)	1 dose annually			
or	or			
Influenza live, attenuated (LAIV4)	1 dose annually			
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap each pregnancy; 1 dose Td/Tdap for wound management (see notes)			
	1 dose Tdap, then Td or Tdap booster every 10 years			
Measles, mumps, rubella (MMR)	1 or 2 doses depending on indication (if born in 1957 or later)			
Varicella (VAR)	2 doses (if born in 1980 or later)		2 doses	
Zoster recombinant (RZV)	2 doses for immunocompromising conditions (see notes)		2 doses	
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
Pneumococcal (PCV15, PCV20, PPSV23)	1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)			1 dose PCV15 followed by PPSV23 OR 1 dose PCV20
Hepatitis A (HepA)	2 or 3 doses depending on vaccine			
Hepatitis B (HepB)	2, 3, or 4 doses depending on vaccine or condition			
Meningococcal A, C, W, Y (MenACWY)	1 or 2 doses depending on indication, see notes for booster recommendations			
Meningococcal B (MenB)	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations			
	19 through 23 years			
***Haemophilus influenzae* type b** (Hib)	1 or 3 doses depending on indication			

Recommended vaccination for adults who meet age requirement, lack documentation of vaccination, or lack evidence of past infection

Recommended vaccination for adults with an additional risk factor or another indication

Recommended vaccination based on shared clinical decision-making

No recommendation/ Not applicable

Table 2 Recommended Adult Immunization Schedule by Medical Condition or Other Indication, United States, 2022

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 percentage and count		Asplenia, complement deficiencies	End-stage renal disease, or on hemodialysis	Heart or lung disease; alcoholism[1]	Chronic liver disease	Diabetes	Health care personnel[2]	Men who have sex with men
			<15% or <200 mm³	≥15% and ≥200 mm³							
IIV4 or RIV4	1 dose annually										
or										or	
LAIV4	Contraindicated						Precaution			1 dose annually	
Tdap or Td	1 dose Tdap each pregnancy	1 dose Tdap, then Td or Tdap booster every 10 years									
MMR	Contraindicated*	Contraindicated	1 or 2 doses depending on indication								
VAR	Contraindicated*	Contraindicated		2 doses							
RZV		2 doses at age ≥19 years		2 doses at age ≥50 years							
HPV	Not Recommended*	3 doses through age 26 years		2 or 3 doses through age 26 years depending on age at initial vaccination or condition							
Pneumococcal (PCV15, PCV20, PPSV23)		1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)								1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)	
HepA	2 or 3 doses depending on vaccine										
HepB	3 doses (see notes)	2, 3, or 4 doses depending on vaccine or condition									
MenACWY	1 or 2 doses depending on indication, see notes for booster recommendations										
MenB	Precaution	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations									
Hib		3 doses HSCT[3] recipients only		1 dose							

- Recommended vaccination for adults who meet age requirement, lack documentation of vaccination, or lack evidence of past infection
- Recommended vaccination for adults with an additional risk factor or another indication
- Recommended vaccination based on shared clinical decision-making
- Precaution—vaccination might be indicated if benefit of protection outweighs risk of adverse reaction
- Contraindicated or not recommended—vaccine should not be administered.

*Vaccinate after pregnancy.

- No recommendation/ Not applicable

1. Precaution for LAIV4 does not apply to alcoholism. **2.** See notes for influenza; hepatitis B; measles, mumps, and rubella; and varicella vaccinations. **3.** Hematopoietic stem cell transplant.

Notes

For vaccine recommendations for persons 18 years of age or younger, see the Recommended Child and Adolescent Immunization Schedule.

COVID-19 Vaccination

COVID-19 vaccines are recommended within the scope of the Emergency Use Authorization or Biologics License Application for the particular vaccine. ACIP recommendations for the use of COVID-19 vaccines can be found at www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html.

CDC's interim clinical considerations for use of COVID-19 vaccines can be found at www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html.

Haemophilus influenzae type b vaccination

Special situations

- **Anatomical or functional asplenia (including sickle cell disease):** 1 dose if previously did not receive Hib; if elective splenectomy, 1 dose, preferably at least 14 days before splenectomy
- **Hematopoietic stem cell transplant (HSCT):** 3-dose series 4 weeks apart starting 6–12 months after successful transplant, regardless of Hib vaccination history

Hepatitis A vaccination

Routine vaccination

- **Not at risk but want protection from hepatitis A** (identification of risk factor not required): 2-dose series HepA (Havrix 6–12 months apart or Vaqta 6–18 months apart [minimum interval: 6 months]) or 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months])

Special situations

- **At risk for hepatitis A virus infection:** 2-dose series HepA or 3-dose series HepA-HepB as above
  - **Chronic liver disease** (e.g., persons with hepatitis B, hepatitis C, cirrhosis, fatty liver disease, alcoholic liver disease, autoimmune hepatitis, alanine aminotransferase [ALT] or aspartate aminotransferase [AST] level greater than twice the upper limit of normal)
  - **HIV infection**
  - **Men who have sex with men**
  - **Injection or noninjection drug use**
  - **Persons experiencing homelessness**
  - **Work with hepatitis A virus** in research laboratory or with nonhuman primates with hepatitis A virus infection
  - **Travel in countries with high or intermediate endemic hepatitis A** (HepA-HepB [Twinrix] may be administered on an accelerated schedule of 3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months)
  - **Close, personal contact with international adoptee** (e.g., household or regular babysitting) in first 60 days after arrival from country with high or intermediate endemic hepatitis A (administer dose 1 as soon as adoption is planned, at least 2 weeks before adoptee's arrival)
  - **Pregnancy** if at risk for infection or severe outcome from infection during pregnancy
  - **Settings for exposure, including** health care settings targeting services to injection or noninjection drug users or group homes and nonresidential day care facilities for developmentally disabled persons (individual risk factor screening not required)

Hepatitis B vaccination

Routine vaccination

- **Age 19 through 59 years:** complete a 2- or 3-, or 4-dose series
  - 2-dose series only applies when 2 doses of Heplisav-B* are used at least 4 weeks apart
  - 3-dose series Engerix-B or Recombivax HB at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 8 weeks / dose 1 to dose 3: 16 weeks])
  - 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months])
  - 4-dose series HepA-HepB (Twinrix) accelerated schedule of 3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months
  - 4-dose series Engerix-B at 0, 1, 2, and 6 months for persons on adult hemodialysis (note: each dosage is double that of normal adult dose, i.e., 2 mL instead of 1 mL)

***Note:** Heplisav-B not recommended in pregnancy due to lack of safety data in pregnant women

Special situations

- **Age 60 years or older* and at risk for hepatitis B virus infection:** 2-dose (Heplisav-B) or 3-dose (Engerix-B, Recombivax HB) series or 3-dose series HepA-HepB (Twinrix) as above
  - **Chronic liver disease** (e.g., persons with hepatitis C, cirrhosis, fatty liver disease, alcoholic liver disease, autoimmune hepatitis, alanine aminotransferase [ALT] or aspartate aminotransferase [AST] level greater than twice upper limit of normal)
  - **HIV infection**
  - **Sexual exposure risk** (e.g., sex partners of hepatitis B surface antigen [HBsAg]-positive persons; sexually active persons not in mutually monogamous relationships; persons seeking evaluation or treatment for a sexually transmitted infection; men who have sex with men)
  - **Current or recent injection drug use**
  - **Percutaneous or mucosal risk for exposure to blood** (e.g., household contacts of HBsAg-positive persons; residents and staff of facilities for developmentally disabled persons; health care and public safety personnel with reasonably anticipated risk for exposure to blood or blood-contaminated body fluids; hemodialysis, peritoneal dialysis, home dialysis, and predialysis patients; patients with diabetes)
  - **Incarcerated persons**
  - **Travel in countries with high or intermediate endemic hepatitis B**

***Note:** Anyone age 60 years or older who does not meet risk-based recommendations may still receive Hepatitis B vaccination.

Human papillomavirus vaccination

Routine vaccination

- **HPV vaccination recommended for all persons through age 26 years:** 2- or 3-dose series depending on age at initial vaccination or condition:
  - **Age 15 years or older at initial vaccination:** 3-dose series at 0, 1–2 months, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 12 weeks / dose 1 to dose 3: 5 months; repeat dose if administered too soon)
  - **Age 9–14 years at initial vaccination and received 1 dose or 2 doses less than 5 months apart:** 1 additional dose
  - **Age 9–14 years at initial vaccination and received 2 doses at least 5 months apart:** HPV vaccination series complete, no additional dose needed

- **Interrupted schedules:** If vaccination schedule is interrupted, the series does not need to be restarted
- **No additional dose recommended when any HPV vaccine series has been completed using the recommended dosing intervals.**

Shared clinical decision-making

- **Some adults age 27–45 years: Based on shared clinical decision-making,** 2- or 3-dose series as above

Special situations

- **Age ranges recommended above for routine and catch-up vaccination or shared clinical decision-making also apply in special situations**
  - **Immunocompromising conditions, including HIV infection**: 3-dose series, even for those who initiate vaccination at age 9 through 14 years.
  - **Pregnancy**: Pregnancy testing is not needed before vaccination; HPV vaccination is not recommended until after pregnancy; no intervention needed if inadvertently vaccinated while pregnant

Influenza vaccination

Routine vaccination

- **Age 19 years or older:** 1 dose any influenza vaccine appropriate for age and health status annually
- For the 2021–2022 season, see www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm
- For the 2022–23 season, see the 2022–23 ACIP influenza vaccine recommendations.

Special situations

- **Egg allergy, hives only:** any influenza vaccine appropriate for age and health status annually
- **Egg allergy–any symptom other than hives** (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: see Appendix listing contraindications and precautions
- **Severe allergic reaction (e.g., anaphylaxis) to a vaccine component or a previous dose of any influenza vaccine:** see Appendix listing contraindications and precautions
- **History of Guillain-Barré syndrome within 6 weeks after previous dose of influenza vaccine:** Generally, should not be vaccinated unless vaccination benefits outweigh risks for those at higher risk for severe complications from influenza

Measles, mumps, and rubella vaccination

Routine vaccination

- **No evidence of immunity to measles, mumps, or rubella:** 1 dose
  - **Evidence of immunity:** Born before 1957 (health care personnel, see below), documentation of receipt of MMR vaccine, laboratory evidence of immunity or disease (diagnosis of disease without laboratory confirmation is not evidence of immunity)

Special situations

- **Pregnancy with no evidence of immunity to rubella:** MMR contraindicated during pregnancy; after pregnancy (before discharge from health care facility), 1 dose
- **Nonpregnant women of childbearing age with no evidence of immunity to rubella:** 1 dose
- **HIV infection with CD4 percentages ≥15% and CD4 count ≥200 cells/mm^3 for at least 6 months and no evidence of immunity to measles, mumps, or rubella:** 2-dose series at least 4 weeks apart; MMR contraindicated for HIV infection with CD4 percentage <15% or CD4 count <200 cells/mm^3
- **Severe immunocompromising conditions:** MMR contraindicated
- **Students in postsecondary educational institutions, international travelers, and household or close, personal contacts of immunocompromised persons with no evidence of immunity to measles, mumps, or rubella:** 2-dose series at least 4 weeks apart if previously did not receive any doses of MMR or 1 dose if previously received 1 dose MMR
- **Health care personnel:**
  - **Born before 1957 with no evidence of immunity to measles, mumps, or rubella:** Consider 2-dose series at least 4 weeks apart for measles or mumps or 1 dose for rubella
  - **Born in 1957 or later with no evidence of immunity to measles, mumps, or rubella:** 2-dose series at least 4 weeks apart for measles or mumps or at least 1 dose for rubella

Meningococcal vaccination

Special situations for MenACWY

- **Anatomical or functional asplenia (including sickle cell disease), HIV infection, persistent complement component deficiency, complement inhibitor (e.g., eculizumab, ravulizumab) use:** 2-dose series MenACWY-D (Menactra, Menveo, or MenQuadfi) at least 8 weeks apart and revaccinate every 5 years if risk remains
- **Travel in countries with hyperendemic or epidemic meningococcal disease, or microbiologists routinely exposed to *Neisseria meningitidis*:** 1 dose MenACWY (Menactra, Menveo, or MenQuadfi) and revaccinate every 5 years if risk remains
- **First-year college students who live in residential housing (if not previously vaccinated at age 16 years or older) or military recruits:** 1 dose MenACWY (Menactra, Menveo, or MenQuadfi)
- For MenACWY **booster dose recommendations** for groups listed under "Special situations" and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm

Shared clinical decision-making for MenB

- **Adolescents and young adults age 16–23 years (age 16–18 years preferred) not at increased risk for meningococcal disease:** Based on shared clinical decision-making, 2-dose series MenB-4C (Bexsero) at least 1 month apart or 2-dose series MenB-FHbp (Trumenba) at 0, 6 months (if dose 2 was administered less than 6 months after dose 1, administer dose 3 at least 4 months after dose 2); MenB-4C and MenB-FHbp are not interchangeable (use same product for all doses in series)

Special situations for MenB

- **Anatomical or functional asplenia (including sickle cell disease), persistent complement component deficiency, complement inhibitor (e.g., eculizumab, ravulizumab) use, or microbiologists routinely exposed to *Neisseria meningitidis*:**
- 2-dose primary series MenB-4C (Bexsero) at least 1 month apart or 3-dose primary series MenB-FHbp (Trumenba) at 0, 1–2, 6 months (if dose 2 was administered at least 6 months after dose 1, dose 3 not needed); MenB-4C and MenB-FHbp are not interchangeable (use same product for all doses in series); 1 dose MenB booster 1 year after primary series and revaccinate every 2–3 years if risk remains

- **Pregnancy:** Delay MenB until after pregnancy unless at increased risk and vaccination benefits outweigh potential risks
- For MenB **booster dose recommendations** for groups listed under "Special situations" and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm

Note: MenB vaccines may be administered simultaneously with MenACWY vaccines if indicated, but at a different anatomic site, if feasible.

Pneumococcal vaccination

Routine vaccination

- **Age 65 years or older** who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm.

Special situations

- **Age 19–64 years** with certain underlying medical conditions or other risk factors** who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown: 1 dose PCV15 or 1 dose PCV20. If PCV15 is used, this should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition,* cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.
- For guidance for patients who have already received a previous dose of PCV13 and/or PPSV23, see www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm.

*__Note:__ Immunocompromising conditions include chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, human immunodeficiency virus, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease, or other hemoglobinopathies.

**__Note:__ 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, CSF leak, diabetes mellitus, generalized malignancy, HIV, Hodgkin disease, immunodeficiency, iatrogenic immunosuppression, leukemia, lymphoma, multiple myeloma, nephrotic syndrome, solid organ transplants, or sickle cell disease or other hemoglobinopathies.

Tetanus, diphtheria, and pertussis vaccination

Routine vaccination

- **Previously did not receive Tdap at or after age 11 years:** 1 dose Tdap, then Td or Tdap every 10 years

Special situations

- **Previously did not receive primary vaccination series for tetanus, diphtheria, or pertussis:** 1 dose Tdap followed by 1 dose Td or Tdap at least 4 weeks after Tdap and another dose Td or Tdap 6–12 months after last Td or Tdap (Tdap can be substituted for any Td dose, but preferred as first dose), Td or Tdap every 10 years thereafter
- **Pregnancy:** 1 dose Tdap during each pregnancy, preferably in early part of gestational weeks 27–36
- **Wound management:** Persons with 3 or more doses of tetanus-toxoid-containing vaccine: For clean and minor wounds, administer Tdap or Td if more than 10 years since last dose of tetanus-toxoid-containing vaccine; for all other wounds, administer Tdap or Td if more than 5 years since last dose of tetanus-toxoid-containing vaccine. Tdap is preferred for persons who have not previously received Tdap or whose Tdap history is unknown. If a tetanus-toxoid-containing vaccine is indicated for a pregnant woman, use Tdap. For detailed information, see www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm

Varicella vaccination

Routine vaccination

- **No evidence of immunity to varicella:** 2-dose series 4–8 weeks apart if previously did not receive varicella-containing vaccine (VAR or MMRV [measles-mumps-rubella-varicella vaccine] for children); if previously received 1 dose varicella-containing vaccine, 1 dose at least 4 weeks after first dose
  - Evidence of immunity: U.S.-born before 1980 (except for pregnant women and health care personnel [see below]), documentation of 2 doses varicella-containing vaccine at least 4 weeks apart, diagnosis or verification of history of varicella or herpes zoster by a health care provider, laboratory evidence of immunity or disease

Special situations

- **Pregnancy with no evidence of immunity to varicella:** VAR contraindicated during pregnancy; after pregnancy (before discharge from health care facility), 1 dose if previously received 1 dose varicella-containing vaccine or dose 1 of 2-dose series (dose 2: 4–8 weeks later) if previously did not receive any varicella-containing vaccine, regardless of whether U.S.-born before 1980
- **Health care personnel with no evidence of immunity to varicella:** 1 dose if previously received 1 dose varicella-containing vaccine; 2-dose series 4–8 weeks apart if previously did not receive any varicella-containing vaccine, regardless of whether U.S.-born before 1980
- **HIV infection with CD4 percentages ≥15% and CD4 count ≥200 cells/mm^3 with no evidence of immunity:** Vaccination may be considered (2 doses 3 months apart); VAR contraindicated for HIV infection with CD4 percentage <15% or CD4 count <200 cells/mm^3
- **Severe immunocompromising conditions:** VAR contraindicated

Zoster vaccination

Routine vaccination

- **Age 50 years or older:** 2-dose series RZV (Shingrix) 2–6 months apart (minimum interval: 4 weeks; repeat dose if administered too soon), regardless of previous herpes zoster or history of zoster vaccine live (ZVL, Zostavax) vaccination (administer RZV at least 2 months after ZVL)

Special situations

- **Pregnancy:** There is currently no ACIP recommendation for RZV use in pregnancy. Consider delaying RZV until after pregnancy.
- **Immunocompromising conditions (including HIV):** RZV recommended for use in persons age 19 years or older who are or will be immunodeficient or immunosuppressed because of disease or therapy. For detailed information, see www.cdc.gov/mmwr/volumes/71/wr/mm7103a2.htm.

Appendix Recommended Adult Immunization Schedule, United States, 2022

Guide to Contraindications and Precautions to Commonly Used Vaccines

Adapted from Table 4-1 in Advisory Committee on Immunization Practices (ACIP) General Best Practice Guidelines for Immunization: Contraindication and Precautions available at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html and ACIP's Recommendations for the Prevention and Control of 2021-22 Seasonal Influenza with Vaccines available at www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm

Interim clinical considerations for use of COVID-19 vaccines including contraindications and precautions can be found at www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

Vaccine	Contraindications[1]	Precautions[2]
Influenza, egg-based, inactivated injectable (IIV4)	• Severe allergic reaction (e.g., anaphylaxis) after previous dose of any influenza vaccine (i.e., any egg-based IIV, ccIIV, RIV, or LAIV of any valency) • Severe allergic reaction (e.g., anaphylaxis) to any vaccine component[3] (excluding egg)	• Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine • Persons with egg allergy with symptoms other than hives (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: Any influenza vaccine appropriate for age and health status may be administered. If using egg-based IIV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist. • Moderate or severe acute illness with or without fever
Influenza, cell culture-based inactivated injectable [(ccIIV4), Flucelvax® Quadrivalent]	• Severe allergic reaction (e.g., anaphylaxis) to any ccIIV of any valency, or to any component[3] of ccIIV4	• Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine • Persons with a history of severe allergic reaction (e.g., anaphylaxis) after a previous dose of any egg-based IIV, RIV, or LAIV of any valency. If using ccIV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist. • Moderate or severe acute illness with or without fever
Influenza, recombinant injectable [(RIV4), Flublok® Quadrivalent]	• Severe allergic reaction (e.g., anaphylaxis) to any RIV of any valency, or to any component[3] of RIV4	• Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine • Persons with a history of severe allergic reaction (e.g., anaphylaxis) after a previous dose of any egg-based IIV, ccIIV, or LAIV of any valency. If using RIV4, administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist. • Moderate or severe acute illness with or without fever
Influenza, live attenuated [LAIV4, Flumist® Quadrivalent]	• Severe allergic reaction (e.g., anaphylaxis) after previous dose of any influenza vaccine (i.e., any egg-based IIV, ccIIV, RIV, or LAIV of any valency) • Severe allergic reaction (e.g., anaphylaxis) to any vaccine component[3] (excluding egg) • Adults age 50 years or older • Anatomic or functional asplenia • Immunocompromised due to any cause including, but not limited to, medications and HIV infection • Close contacts or caregivers of severely immunosuppressed persons who require a protected environment • Pregnancy • Cochlear implant • Active communication between the cerebrospinal fluid (CSF) and the oropharynx, nasopharynx, nose, ear, or any other cranial CSF leak • Received influenza antiviral medications oseltamivir or zanamivir within the previous 48 hours, peramivir within the previous 5 days, or baloxavir within the previous 17 days.	• Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of any type of influenza vaccine • Asthma in persons aged 5 years old or older • Persons with egg allergy with symptoms other than hives (e.g., angioedema, respiratory distress) or required epinephrine or another emergency medical intervention: Any influenza vaccine appropriate for age and health status may be administered. If using LAIV4 (which is egg based), administer in medical setting under supervision of health care provider who can recognize and manage severe allergic reactions. May consult an allergist. • Persons with underlying medical conditions (other than those listed under contraindications) that might predispose to complications after wild-type influenza virus infection [e.g., chronic pulmonary, cardiovascular (except isolated hypertension), renal, hepatic, neurologic, hematologic, or metabolic disorders (including diabetes mellitus)] • Moderate or severe acute illness with or without fever

1. When a contraindication is present, a vaccine should NOT be administered. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html
2. When a precaution is present, vaccination should generally be deferred but might be indicated if the benefit of protection from the vaccine outweighs the risk for an adverse reaction. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html
3. Vaccination providers should check FDA-approved prescribing information for the most complete and updated information, including contraindications, warnings, and precautions. Package inserts for U.S.-licensed vaccines are available at www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states.

Appendix Recommended Adult Immunization Schedule, United States, 2022

Vaccine	Contraindications[1]	Precautions[2]
Haemophilus influenzae type b (Hib)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • For Hiberix, ActHib, and PedvaxHIB only: History of severe allergic reaction to dry natural latex	• Moderate or severe acute illness with or without fever
Hepatitis A (HepA)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] including neomycin	• Moderate or severe acute illness with or without fever
Hepatitis B (HepB)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] including yeast • For Heplisav-B only: Pregnancy	• Moderate or severe acute illness with or without fever
Hepatitis A- Hepatitis B vaccine [HepA-HepB, (Twinrix®)]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] including neomycin and yeast	• Moderate or severe acute illness with or without fever
Human papillomavirus (HPV)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3]	• Moderate or severe acute illness with or without fever
Measles, mumps, rubella (MMR)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • Severe immunodeficiency (e.g., hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, long-term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised) • Pregnancy • Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent	• Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product) • History of thrombocytopenia or thrombocytopenic purpura • Need for tuberculin skin testing or interferon-gamma release assay (IGRA) testing • Moderate or severe acute illness with or without fever
Meningococcal ACWY (MenACWY) [MenACWY-CRM (Menveo®); MenACWY-D (Menactra®); MenACWY-TT (MenQuadfi®)]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • For MenACWY-D and Men ACWY-CRM only: severe allergic reaction to any diphtheria toxoid– or CRM197–containing vaccine • For MenACWY-TT only: severe allergic reaction to a tetanus toxoid-containing vaccine	• Moderate or severe acute illness with or without fever
Meningococcal B (MenB) [MenB-4C (Bexsero); MenB-FHbp (Trumenba)]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3]	• Pregnancy • For MenB-4C only: Latex sensitivity • Moderate or severe acute illness with or without fever
Pneumococcal conjugate (PCV15)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • Severe allergic reaction (e.g., anaphylaxis) to any diphtheria-toxoid–containing vaccine or to its vaccine component[3]	• Moderate or severe acute illness with or without fever
Pneumococcal conjugate (PCV20)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • Severe allergic reaction (e.g., anaphylaxis) to any diphtheria-toxoid– containing vaccine or to its vaccine component[3]	• Moderate or severe acute illness with or without fever
Pneumococcal polysaccharide (PPSV23)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3]	• Moderate or severe acute illness with or without fever
Tetanus, diphtheria, and acellular pertussis (Tdap) Tetanus, diphtheria (Td)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • For Tdap only: Encephalopathy (e.g., coma, decreased level of consciousness, prolonged seizures), not attributable to another identifiable cause, within 7 days of administration of previous dose of DTP, DTaP, or Tdap	• Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of tetanus-toxoid–containing vaccine • History of Arthus-type hypersensitivity reactions after a previous dose of diphtheria-toxoid—containing or tetanus-toxoid– containing vaccine; defer vaccination until at least 10 years have elapsed since the last tetanus-toxoid–containing vaccine • Moderate or severe acute illness with or without fever • For Tdap only: Progressive or unstable neurological disorder, uncontrolled seizures, or progressive encephalopathy until a treatment regimen has been established and the condition has stabilized
Varicella (VAR)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • Severe immunodeficiency (e.g., hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, long- term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised) • Pregnancy • Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent	• Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product) • Receipt of specific antiviral drugs (acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination (avoid use of these antiviral drugs for 14 days after vaccination) • Use of aspirin or aspirin-containing products • Moderate or severe acute illness with or without fever
Zoster recombinant vaccine (RZV)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3]	• Moderate or severe acute illness with or without fever • Current herpes zoster infection

1. When a contraindication is present, a vaccine should NOT be administered. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html
2. When a precaution is present, vaccination should generally be deferred but might be indicated if the benefit of protection from the vaccine outweighs the risk for an adverse reaction. Kroger A, Bahta L, Hunter P. ACIP General Best Practice Guidelines for Immunization. www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html
3. Vaccination providers should check FDA-approved prescribing information for the most complete and updated information, including contraindications, warnings, and precautions. Package inserts for U.S.-licensed vaccines are available at www.fda.gov/vaccines-blood-biologics/approved-products/vaccines-licensed-use-united-states.

10 Steps to Implementing Standing Orders for Immunization in Your Practice Setting

Introduction

Standing orders are written protocols approved by a physician or other authorized practitioner that allow qualified health care professionals (who are eligible to do so under state law, such as registered nurses or pharmacists) to assess the need for and administer vaccine to patients meeting certain criteria, such as age or underlying medical condition. The qualified health care professionals must also be eligible by state law to administer certain medications, such as epinephrine, under standing orders should a medical emergency (rare event) occur.

Having standing orders in place **streamlines your practice workflow** by eliminating the need to obtain an individual physician's order to vaccinate each patient. Standing orders carried out by nurses or other qualified health care professionals are the most consistently effective means for increasing vaccination rates and reducing missed opportunities for vaccination, which improves the quality of care for patients.

While this guide focuses on implementing standing orders for influenza vaccination, the basic principles included can be used to implement standing orders for other vaccines and for any age group desired.

Standing orders are **straightforward to use**. The challenge is to integrate them into the practice setting so they can be used to their full potential. This process requires some preparation up front to assure everyone in the practice understands the reasons why standing orders are being implemented. Suggested steps to help you work through this process are shown below.

Phase 1: *Get Ready* – Build Support of Leadership

STEP 1 **Discuss the benefits of implementing standing orders protocols with the leadership (medical director, clinicians, clinic manager, lead nurses) in your medical setting.**

Standing orders will:

- Facilitate efficient assessment for and administration of influenza vaccine in your practice.
- Improve influenza vaccination rates in your practice.
- Protect more of your patients from influenza.
- Empower nurses and/or other eligible staff to use standing orders to protect more patients.
- Decrease opportunities for influenza transmission in your health care setting.

It is important to get buy-in from physician and nurse leadership from the start.

Medical Director – This person is responsible for signing the standing orders protocols or supervises the clinician who signs them, so it is critical that he/she agrees with the need for standing orders and supports their use.

Clinician – Determine which clinician will review and sign the standing orders protocols for the practice.

Providers – Identify issues that might lead to any resistance among other providers.

Nurse Leaders – Involve nurse leaders in the planning from the start. Nurses are the key players in implementing and carrying out standing orders programs.

If possible, determine the influenza vaccination rate in your practice *prior* to meeting with leadership. Measured vaccination rates are inevitably lower (sometimes much lower) than perceived rates. Lower-than-expected vaccination rates will help support the need for a standing orders program.

As appropriate for your medical setting, you also may want to discuss the standing orders protocols with your legal counsel to be sure they comply with all applicable state requirements.

STEP 2 Identify the person who will take the lead and be in charge of your standing orders program.

- In most practices, the lead person will be a nurse, nurse practitioner, or physician assistant.
- The lead person must be an influential leader who has medical knowledge, understands the standing orders protocols, and is able to answer questions about them from other staff members.
- The lead person must be **motivated** to protect patients by improving the adult vaccination levels in your practice – **a true immunization champion**.

STEP 3 Reach agreement about which vaccine(s) your practice will administer using standing orders.

It may be best to start using standing orders only for influenza vaccine if you have not implemented standing orders previously. Later, when staff are trained and know how standing orders work, you can expand their use to additional vaccines. Standing orders work well for improving coverage for child, adolescent, and adult vaccines.

Completing Phase 1 means you are on your way. You have buy-in from your medical director and clinicians, buy-in from nurse leadership, have identified your **immunization champion** to lead the effort, and have decided on the vaccines you want to provide. Now you're ready to move to Phase 2.

Phase 2: *Get Set* – Develop Materials and Strategies

STEP 4 Create standing orders protocols for the vaccine(s) you want to administer.

- Don't reinvent the wheel! The Immunization Action Coalition (www.immunize.org) has standing orders templates for all routinely recommended vaccines available to download at www.immunize.org/standing-orders. IAC standing orders are reviewed by the Centers for Disease Control and Prevention (CDC) for technical accuracy. You may use IAC's standing orders templates as written, or you may modify them to meet your practice's needs.

- Have the standing order(s) reviewed and signed by the medical director or clinician responsible for the program.

NOTE: Immunization Action Coalition (IAC) also has standing orders templates available for managing vaccine reactions, which include the administration of medication. These templates are available at www.immunize.org/catg.d/p3082.pdf for adults and at www.immunize.org/catg.d/p3082a.pdf for children.

STEP 5 Hold a meeting to explain your new standing orders program to all staff members.

- It is crucial that all staff understand the program because they will all be involved directly or indirectly.
- To get buy-in from staff, you will need to explain WHY you are starting this program. Some of the reasons are shown in the box below:

Why are we starting a standing orders program?

- Disease should be prevented whenever possible, and vaccines can do this.
- Our patients are counting on us to keep them healthy.
- Adult vaccination rates in the United States are low and significant racial and ethnic disparities exist.
- Vaccination levels among adults are inadequate in most practices.
- Standing orders have been demonstrated to streamline the assessment and delivery of immunizations in medical practices.
- The burden of disease as a result of vaccine-preventable diseases is seen not only in increased morbidity and mortality, but also in increased costs to the health care system.

- Review how standing orders work and the specific protocols and procedures with all staff members who will be involved.

STEP 6 Determine the role various staff members will play in implementing/using standing orders.

Here are some general and specific questions that will help you plan:

WHO in your practice:

- is eligible under state law (RNs, pharmacists, others?) to assess a patient's vaccination needs and provide vaccinations using the standing orders protocols?
- can help determine the need for a patient to be vaccinated? (For example, the receptionist or the person who rooms patients can inquire if they have had their influenza vaccine yet this season.)
- will check the patient's chart to find out if they need vaccinations?
- will provide screening checklists for contraindications and precautions to patients, and who will review the patients' answers. (available at www.immunize.org/handouts/screening-vaccines.asp) Can these questions be added to your electronic medical record (EMR)?

(CONTINUED) **WHO** in your practice:

- will give Vaccine Information Statements (VISs) (legally required documents given before vaccination) to patients? (www.immunize.org/vis)
- will administer the vaccine?
- will ensure the patient's personal record is updated and given to the patient?

WHAT is the role of:

- the front desk staff? How can they help?
- the nurse?
- the medical assistant?

WHERE in your practice:

- will vaccine be administered?
- will vaccine administration information be recorded (e.g., EMR, paper document in medical chart, state/local immunization information system or "registry")? If you don't use an EMR and don't already have a medical record chart form for vaccination, you can use the Immunization Action Coalition's record forms for adults (www.immunize.org/catg.d/p2023.pdf) or children (www.immunize.org/catg.d/p2022.pdf).

STEP 7 Determine your standing orders operational strategy.

Review your existing vaccination services logistics. Are there ways to improve patient vaccination and flow and to maximize your office immunization rates?

Here are some proposed modifications to consider:

- Assess the influenza vaccination status of every patient who enters the office by asking the patient directly and checking the chart.
- Consider providing vaccinations in an easy-to-access site in your practice, separated from the normal traffic pattern through the office.
- Consider offering vaccinations under standing orders on a walk-in basis.
- Discuss expanding your vaccination services when using standing orders. For example, can you:
  - Hold vaccination clinics on evenings or weekends?
  - Have "nurse-only" visits for vaccination?
  - Offer "express" service for vaccination during regular office hours for both patients with appointments and those who are "walk-ins"?
- If you use an EMR, consider whether the standing orders protocols and screening questionnaires can be added as prompts within your existing system.
- If viable in your clinic setting, determine your current immunization rates so you will be able to measure your improvements after implementing standing orders.

STEP 8 Identify strategies and publicize your program to your patients.

Your enhanced vaccination program is of more value if your patients know the service is available.

- Review your current methods for contacting patients, e.g., appointment reminders, laboratory results, prescriptions, online communications, text messaging, etc. Can these methods also be used to tell patients about their need for vaccination and the availability of a convenient new program?
- Consider whether your existing communication systems are sufficient to inform patients about enhanced vaccine availability.
- Implement reminder/recall systems. (A reminder system notifies the patient of an upcoming appointment. A recall system contacts a patient who misses an appointment and encourages them to reschedule.) Your state/local health department often can help you with ideas on how to do this.
- Here are strategies for informing and identifying patients who need vaccines:
  - At each visit, inform all patients about when they should come for influenza vaccine.
  - Email or text the information.
  - Put a notice about the program on the practice's website, if applicable.
  - Use social media (such as Facebook or Twitter).
  - Place advertisements in local media.
  - Use promotional mailings.
  - Add promotional telephone messages or "on hold" messaging.
  - Place appropriate signs and posters in the office.

Materials You Will Need to Have on Hand

All these materials are FREE on the IAC website:
www.immunize.org

- A copy of the signed standing orders protocol at your fingertips for each vaccine you plan to use (templates available at www.immunize.org/standing-orders)
- Adult and child contraindication screening checklists to help you determine if there is any reason not to vaccinate your patient (available at www.immunize.org/catg.d/p4065.pdf and www.immunize.org/catg.d/p4060.pdf)
- Vaccine Information Statements for all vaccines you plan to administer (available in English and additional languages at www.immunize.org/vis)
- Adult and child vaccine administration record forms, if you don't use an electronic medical record (EMR) and don't already have a medical record chart form (available at www.immunize.org/catg.d/p2023.pdf and www.immunize.org/catg.d/p2022.pdf)
- Information on how to report vaccinations to your state/local immunization information system (registry) if one is available. (See www.cdc.gov/vaccines/programs/iis/contacts-registry-staff.html)
- To give to your patients: a personally-held vaccination record card (available for purchase at www.immunize.org/shop/record-cards.asp) or a printed copy of the vaccine administered, including the date it was given.

Completing Phase 2 has helped you to get your standing orders logistics figured out. You have determined who will do what, and when they will do it. You have made your patients aware of enhanced vaccine availability. Time to move to Phase 3.

Phase 3: *Go!* – Make It Happen

STEP 9 Start vaccinating!

Make sure the nursing and medical staff have all the tools they need to run a successful vaccination program. Listing all these materials is beyond the scope of this guide, but topics can include proper storage and handling of vaccines, vaccine administration techniques, strategies to avoid vaccine administration errors, documentation requirements for administering vaccines, and materials to help answer questions of vaccine-hesitant patients. Visit www.immunize.org/clinic for many helpful resources.

STEP 10 Review your progress.

As with all quality improvement activities, it's wise to review your standing orders program shortly after it begins, check in with staff each week until it's running well, and then every few months until the end of influenza vaccination season. Compare the number of doses of vaccine you gave this season with a season before your standing orders program was put in place. Hold a staff meeting to get input from everyone involved in the program to find out what went right and how the program could be improved for next season. Consider whether you are ready to expand your use of standing orders to additional vaccines.

Congratulations on implementing standing orders in your practice! Both you and your patients are now benefitting from this proven method to streamline your office practice while improving your patients' quality of care.

Using Standing Orders for Administering Vaccines: What You Should Know

The use of standing orders for vaccination facilitates the delivery of immunization services to patients in clinics, hospitals, and community settings.

Standing orders have been shown to increase vaccination coverage rates.

▼

Go to **www.immunize.org/standing-orders** for the most current versions of sample standing orders.

What are standing orders?

Standing orders authorize nurses, pharmacists, and other appropriately trained healthcare personnel, where allowed by state law, to assess a patient's immunization status and administer vaccinations according to a protocol approved by a medical director in a healthcare setting, a physician, or another authorized practitioner. Standing orders work by enabling assessment and vaccination of the patient without the need for clinician examination or direct order from the attending provider at the time of the interaction. Standing orders can be established for the administration of one or more specific vaccines to a broad or narrow set of patients in healthcare settings such as clinics, hospitals, pharmacies, and long-term care facilities.

Who recommends standing orders for vaccination?

The Community Preventive Services Task Force (Task Force): The Task Force[1] recommends standing orders for vaccinations based on strong evidence of effectiveness in improving vaccination rates:

1. in adults and children,
2. when used alone or when combined with additional interventions, and
3. across a range of settings and populations.

Read the full Task Force Finding and Rationale Statement at www.thecommunityguide.org/findings/vaccination-programs-standing-orders

The Centers for Disease Control and Prevention (CDC): CDC's Advisory Committee on Immunization Practices (ACIP) specifically recommends standing orders for influenza and pneumococcal vaccinations and several other vaccines (e.g., hepatitis B, varicella). See *Use of Standing Orders Programs to Increase Adult Vaccination Rates: Recommendations of the ACIP. MMWR* 2000;49 (No. RR-1) at www.cdc.gov/mmwr/preview/mmwrhtml/rr4901a2.htm

What are the elements of a standing order?

A comprehensive standing order should include the following elements:

1. Who is targeted to receive the vaccine;
2. How to determine if a patient needs or should receive a particular vaccination (e.g., indications, contraindications, and precautions);
3. Procedures for administering the vaccine (e.g., vaccine name, schedule for vaccination, appropriate needle size, vaccine dosage, route of administration);
4. Provision of any federally required information (e.g., Vaccine Information Statement);
5. How to document vaccination in the patient record;
6. A protocol for the management of any medical emergency related to the administration of the vaccine; and
7. How to report possible adverse events occurring after vaccination.

Who is authorized to administer vaccines under standing orders?

Each of the 50 states separately regulates physicians, nurses, pharmacists, and other health-related practitioners. For further information about who can carry out standing orders in your state, contact your state immunization program or the appropriate state body (e.g., state board of medical/nursing/pharmacy practice).

Who is authorized to sign the standing orders?

In general, standing orders are approved by a medical director in a healthcare setting, a physician, or another authorized practitioner. State law or regulatory agency might authorize other healthcare professionals to sign standing orders.

What should be done with the standing orders after they have been signed?

Signed standing orders should be kept with all other signed medical procedures and protocols that are operational in one's clinic setting. A copy should also be readily available for clinic staff who operate under those standing orders.

Do standing orders need to be renewed (e.g., yearly)?

Generally, standing orders will include an implementation date as well as an expiration date. Periodic review of standing orders is important, because vaccine recommendations may change over time.

Where can I find sample standing orders?

Immunize.org has developed templates of standing orders for vaccines that are routinely recommended to children and adults. They are updated as needed and reviewed for technical accuracy by immunization experts. The most current versions can be accessed by going to www.immunize.org/standing-orders.

FOOTNOTE

1 The Task Force was established in 1996 by the U.S. Department of Health and Human Services to identify population health interventions that are scientifically proven to save lives, increase lifespans, and improve quality of life. The Task Force produces recommendations (and identifies evidence gaps) to help inform the decision making of federal, state, and local health departments, other government agencies, communities, healthcare providers, employers, schools, and research organizations. For more information, see www.thecommunityguide.org/index.html.

You Must Provide Patients with Vaccine Information Statements (VISs) – It's Federal Law!

What are Vaccine Information Statements (VISs)?

Vaccine Information Statements (VISs) are documents produced by the Centers for Disease Control and Prevention (CDC), in consultation with panels of experts and parents, to properly inform vaccinees (or their parents/legal representatives) about the risks and benefits of each vaccine. VISs are not meant to replace interactions with healthcare providers, who should address any questions or concerns that the vaccinee (or parent/legal representative) may have.

Using VISs is legally required!

Federal law (under the National Childhood Vaccine Injury Act) requires a healthcare professional to provide a copy of the current VIS to an adult patient or to a child's parent/legal representative before vaccinating an adult or child with a dose of the following vaccines: diphtheria, tetanus, pertussis, measles, mumps, rubella, polio, hepatitis A, hepatitis B, *Haemophilus influenzae* type b (Hib), influenza, pneumococcal conjugate, meningococcal, rotavirus, human papillomavirus (HPV), or varicella (chickenpox).

Where to get VISs

All available VISs can be downloaded from the websites of Immunize.org at www.immunize.org/vis or CDC at www.cdc.gov/vaccines/hcp/vis/index.html. Ready-to-copy versions may also be available from your state or local health department.

Translations: You can find VISs in more than 40 languages on the Immunize.org website at www.immunize.org/vis.

To obtain translations of VIS in languages other than English, go to www.immunize.org/vis.

According to CDC, the appropriate VIS must be given:

- Prior to the vaccination (and prior to each dose of a multi-dose series);
- Regardless of the age of the vaccinee;
- Regardless of whether the vaccine is given in a public or private healthcare setting.

Top 10 Facts About VISs

FACT 1 It's federal law! You must provide current* VISs to all your patients before vaccinating them.

Federal law requires that VISs must be used for patients of **ALL ages** when administering these vaccines:

- DTaP (includes DT)
- Td and Tdap
- hepatitis A
- hepatitis B
- Hib
- HPV
- influenza (inactivated and live, intranasal)
- MMR and MMRV
- meningococcal (MenACWY, MenB)
- pneumococcal conjugate
- polio
- rotavirus
- varicella (chickenpox)

For the vaccines not covered under the National Childhood Vaccine Injury Act (i.e., adenovirus, anthrax, dengue, Japanese encephalitis, pneumococcal polysaccharide, rabies, typhoid, yellow fever, and zoster), providers are not required by federal law to use VISs unless they have been purchased under CDC contract. However, CDC recommends that VISs be used whenever these vaccines are given.

*Federal law allows up to 6 months for a new VIS to be used.

FACT 2 VISs can be given to patients in a variety of ways.

In most medical settings, VISs are provided to patients (or their parents/legal representatives) in paper form. However, VISs also may be provided using electronic media. Regardless of the format used, the goal is to provide a current VIS just prior to vaccination.

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Most current versions of VISs (table)

As of February 4, 2022, the most recent versions of the VISs are as follows:

Adenovirus	1/8/20
Anthrax	1/8/20
Cholera	10/30/19
Dengue	12/17/21
DTaP	8/6/21
Hepatitis A	10/15/21
Hepatitis B	10/15/21
Hib	8/6/21
HPV	8/6/21
Influenza	8/6/21
Japanese enceph	8/15/19
MenACWY	8/6/21
MenB	8/6/21
MMR	8/6/21
MMRV	8/6/21
Multi-vaccine	10/15/21
PCV	2/4/22
PPSV23	10/30/19
Polio	8/6/21
Rabies	1/8/20
Rotavirus	10/15/21
Td	8/6/21
Tdap	8/6/21
Typhoid	10/30/19
Varicella	8/6/21
Yellow fever	4/1/20
Zoster	2/4/22

A handy list of current VIS dates is also available at www.immunize.org/catg.d/p2029.pdf.

(For information on special circumstances involving vaccination of a child when a parent/legal representative is not available at the time of vaccination, see CDC's *VIS Frequently Asked Questions* at www.cdc.gov/vaccines/hcp/vis/about/vis-faqs.html.)

Prior to vaccination, VIS may be:

- Provided as a paper copy
- Offered on a permanent, laminated office copy
- Downloaded by the vaccinee (parent/legal representative) to a smartphone or other electronic device (VISs have been specially formatted for this purpose)
- Made available to be read before the office visit, e.g., by giving the patient or parent a copy to take home during a prior visit, or telling them how to download or view a copy from the Internet. These patients must still be offered a copy in one of the formats described previously to read during the immunization visit, as a reminder.

Regardless of the way the patient is given the VIS to read, providers must still offer a copy (which can be an electronic copy) of each appropriate VIS to take home following the vaccination. However, the vaccinee may decline.

FACT 3 VISs are required in both public and private sector healthcare settings.

Federal law requires the use of VISs in both public and private sector settings, regardless of the source of payment for the vaccine.

FACT 4 You must provide a current VIS *before* a vaccine is administered to the patient.

A VIS provides information about the disease and the vaccine and must be given to the patient **before** a vaccine is administered. It is also acceptable to hand out the VIS well before administering vaccines (e.g., at a prenatal visit or at birth for vaccines an infant will receive during infancy), as long as you still provide a current VIS right before administering vaccines.

FACT 5 You must provide a current VIS for *each* dose of vaccine you administer.

The most current VIS must be provided before **each dose** of vaccine is given, including vaccines given as a series of doses. For example, if 5 doses of a single vaccine are required (e.g., DTaP), the patient (parent/legal representative) must have the opportunity to read the information on the VIS before each dose is given.

FACT 6 You must provide VISs whenever you administer combination vaccines.

If you administer a combination vaccine that does not have a stand-alone VIS (e.g., Kinrix, Quadracel, Pediarix, Pentacel, Twinrix) you should provide the patient with individual VISs for the component vaccines, or use the Multi-Vaccine VIS (see below).

The Multi-Vaccine VIS may be used in place of the individual VISs for DTaP, Hib, hepatitis B, polio, and pneumococcal when two or more of these vaccines are administered during the same visit. It may be used for infants as well as children through 6 years of age. The Multi-Vaccine VIS should not be used for adolescents or adults.

FACT 7 VISs should be given in a language/format that the recipient can understand, whenever possible.

For patients who don't read or speak English, the law requires that providers ensure all patients (parent/legal representatives) receive a VIS, regardless of their ability to read English. To obtain VISs in more than 40 languages, visit the Immunize.org website at www.immunize.org/vis. Providers can supplement VISs with visual presentations or oral explanations as needed.

FACT 8 Federal law does not require signed consent in order for a person to be vaccinated.

Signed consent is not required by federal law for vaccination (although some states may require it).

FACT 9 To verify that a VIS was given, providers must record in the patient's medical record (or permanent office log or file) the following information:

- The edition date of the VIS (found on the back at the right bottom corner)
- The date the VIS is provided (i.e., the date of the visit when the vaccine is administered)

In addition, providers must record:

- The office address and name and title of the person who administers the vaccine
- The date the vaccine is administered
- The vaccine manufacturer and lot number

FACT 10 VISs should not be altered before giving them to patients, but you can add some information.

Providers should not change a VIS or write their own VISs. However, it is permissible to add a practice's name, address, and contact information to an existing VIS.

Additional resources on VISs and their use are available from the following organizations:

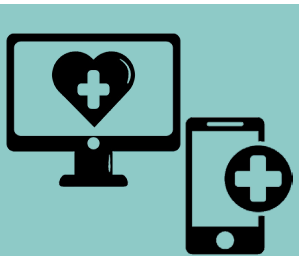
Immunization Action Coalition

- *VIS general information and translations in more than 40 languages:* www.immunize.org/vis
- *Current Dates of Vaccine Information Statements:* www.immunize.org/catg.d/p2029.pdf

Centers for Disease Control and Prevention

- *VIS website:* www.cdc.gov/vaccines/hcp/vis
- *VIS Facts:* www.cdc.gov/vaccines/hcp/vis/about/facts-vis.html
- *VIS FAQs:* www.cdc.gov/vaccines/hcp/vis/about/vis-faqs.html

Best Practices for Scheduling Immunization Appointments



✓LET PATIENTS BOOK ONLINE, IN-PERSON OR OVER THE PHONE.

The ability to book appointments using multiple methods allows efficiency and flexibility for your patients.

✓OFFER MULTIPLE TIME-SLOT OPTIONS TO PATIENTS.

Give patients as many options as possible to choose the best time slot for their schedule. This will reduce the chance of cancellations due to time conflicts.

✓RECORD PATIENT'S CONTACT INFORMATION.

Update/confirm patient's phone number, e-mail, and mailing address at each visit. You'll need to be able to contact them for an upcoming appointment or to reschedule their next appointment.

✓SEND PATIENT REMINDERS BEFORE THEIR APPOINTMENT.

Using different methods of appointment reminders reduces the risk of patients missing or canceling appointments.

✓DESIGNATE AN APPOINTMENT SCHEDULER FOR YOUR OFFICE.

Designate an individual(s) to manage appointment scheduling and provide them with training on childhood/adolescent immunization schedules.

TEXAS Health and Human Services | Texas Department of State Health Services

Texas Department of State Health Services
Immunization Unit

Stock No. 11-15747
Rev. 07/2020

Suggestions to Improve Your Immunization Services

Looking for clear-cut ways to improve your practice's efficiency in administering vaccines and increase your immunization rates?

Here are the basics:

- Keep staff up to date with current recommendations.
- Maintain complete, up-to-date patient records.
- Maintain and protect your vaccine supply.
- Help your patients anticipate their need for vaccinations.
- Avoid "missed opportunities" to vaccinate.
- Maintain administration best practices.
- Improve access to your immunization services.
- Communicate with patients and parents.
- Evaluate and improve your practice's performance.

Use the handy checklist that follows to help you implement or reinforce these suggestions. Mark areas that "need attention" or are "done"… and congratulate yourself for those items that have been completed!

Yes = We already do this.

No = We don't like this idea, or it couldn't work in our practice setting.

Partly = We do some of this (or do it sometimes); we will consider it.

	yes	no	partly
	✓		

Keep staff up to date with current recommendations

		yes	no	partly
1	We post the current, official CDC U.S. immunization schedules (or the official schedule of our medical association or state health department) in all exam rooms.	☐	☐	☐
2	We use the official "catch-up" schedule for bringing children and adolescents up to date on their vaccinations when they have fallen behind.	☐	☐	☐
3	We understand and implement the routine vaccination schedule, as well as special vaccination recommendations for high-risk patients (e.g., certain groups who need hepatitis A, hepatitis B, meningococcal, pneumococcal vaccines).	☐	☐	☐
4	We routinely receive, read, and share updates on vaccines and other immunization issues from government agencies (e.g., CDC), our state or local health department, the Immunization Action Coalition, or other trusted organizations.	☐	☐	☐

Maintain complete, up-to-date patient records

		yes	no	partly
1	We participate in our local/regional/state immunization registry (Immunization Information System or "IIS").	☐	☐	☐
2	When scheduling appointments, we remind patients/parents to bring along their (or their child's) record of immunizations, and we confirm the address and phone number in case we need to contact them.	☐	☐	☐
3	We maintain a comprehensive immunization record in a highly visible location in each patient's chart or electronic medical record.	☐	☐	☐
4	EVERY TIME a patient comes in (e.g., acute or chronic care visit, physical exam), we ask if they have received vaccinations elsewhere. If they have, we check the IIS (registry) or request written documentation, and we record confirmed vaccination dates and places in the patient's medical record. If no immunization record exists for a patient at the time of the visit and we are unable to obtain records by phone or the IIS, we give the vaccinations we determine are indicated, based on the history provided by the patient/parent. We have the patient/parent sign a release allowing us to obtain vaccination records from previous providers. If no prior records can be located, we treat the patient as if unvaccinated.	☐	☐	☐
5	During each patient visit, we document in the patient's chart that the vaccination status was reviewed. If a recommended vaccine was not administered, we document the reason why.	☐	☐	☐

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immunization action coalition
IAC
immunize.org

Technical content reviewed by the Centers for Disease Control and Prevention

Saint Paul, Minnesota ▪ 651-647-9009 ▪ www.immunize.org ▪ www.vaccineinformation.org

www.immunize.org/catg.d/p2045.pdf ▪ Item #P2045 (5/17)

Maintain and protect your vaccine supply

		yes	no	partly
1	We designate a vaccine coordinator and backup coordinator to oversee all vaccine storage and handling activities.	☐	☐	☐
2	We provide vaccine storage and handling training to all new staff, as well as updates to *all* staff whenever recommendations are changed or a new vaccine product is introduced.	☐	☐	☐
3	We follow the guidance provided in CDC's "Vaccine Storage and Handling Toolkit."	☐	☐	☐

Help your patients anticipate their need for vaccinations

		yes	no	partly
1	We train all nursing and office staff (e.g., receptionists, schedulers) on the minimum ages and intervals permissible between vaccinations and how to determine valid and invalid contraindications to vaccinations. We post this information in places available to all staff.	☐	☐	☐
2	Prior to seeing the clinician (e.g., while in the waiting room), we ask patients/parents to complete a simple screening checklist for vaccine contraindications to determine if the vaccinations they need can be given safely on the day of their visit.	☐	☐	☐
3	We have a staff member complete a vaccination assessment and give the appropriate Vaccine Information Statements (VISs) to the patient/parent in a language they can read, when a translation is needed and available.	☐	☐	☐

Avoid "missed opportunities" to vaccinate

		yes	no	partly
1	We have a designated immunization "champion" to keep all clinic staff current on recommendations and effective strategies to avoid missed opportunities to vaccinate.	☐	☐	☐
2	We train our staff to administer multiple vaccinations to patients who are due for multiple vaccinations.	☐	☐	☐
3	Prior to patient visits, we review the immunization record for each patient and flag charts of those who are due or overdue for vaccination(s).	☐	☐	☐
4	When feasible, we check the immunization status of other family members (siblings, etc.) who have accompanied the patient, and, if they are behind on their vaccinations, we vaccinate them as well.	☐	☐	☐
5	We put a system in place to ensure vaccines are ordered in a timely manner and are consistently available.	☐	☐	☐

Maintain administration best practices

		yes	no	partly
1	We adhere to the "Rights" of medication administration by ensuring we have the: ***Right*** patient; ***Right*** vaccine and diluent (when applicable); ***Right*** time (including the correct age and interval, as well as before the product expiration/time/date); ***Right*** route (including the correct needle gauge and length and technique); ***Right*** site; and ***Right*** documentation.	☐	☐	☐
2	We screen for contraindications and precautions prior to administering any vaccine(s).	☐	☐	☐
3	We discuss vaccine benefits and risks (and vaccine-preventable disease risks) using VISs and other reliable resources.	☐	☐	☐
4	We follow best practices with respect to patient positioning, including comforting restraint for children and sitting for adults.	☐	☐	☐
5	We follow the manufacturer's vaccine-specific guidelines for vaccine preparation and administration.	☐	☐	☐
6	We maintain proper hand hygiene before vaccine preparation, between patients, and any other time hands need to be cleaned. Although gloves are not required when administering vaccines, if gloves are worn, we change them and follow proper hand hygiene between patients.	☐	☐	☐
7	We incorporate strategies to prevent administration errors as described in CDC's *Pink Book*.	☐	☐	☐

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Improve access to your immunization services

		yes	no	partly
1	We provide vaccination services during some evening and/or weekend hours.	☐	☐	☐
2	We implement standing orders to allow appropriate professional staff to independently screen patients and administer recommended vaccines.	☐	☐	☐
3	We allow patients to walk in during office hours for a "nurse only" visit and get vaccinated.	☐	☐	☐
4	If patients miss visits and can't be rescheduled quickly, we reschedule them in one to two weeks for a "shots only" visit.	☐	☐	☐

Communicating with patients and parents

		yes	no	partly
1	We provide patients/parents a simple schedule of recommended vaccinations in a language they can read.	☐	☐	☐
2	We have a policy statement for our practice that states the importance we place on their child's vaccinations, and we give a copy of it to all new patients. (Note: You can find a policy statement template on IAC's website at www.immunize.org/catg.d/p2067.pdf.)	☐	☐	☐
3	We provide the patient with documentation (e.g., record card, print-out, or other) of the vaccinations received at our office each time we administer a vaccine.	☐	☐	☐
4	We give patients/parents an information sheet about how to treat pain and fever following vaccinations.	☐	☐	☐
5	We provide reliable educational resources (in a language they can read) to patients/parents who have questions or concerns about vaccine safety or who want more vaccine information.	☐	☐	☐
6	If patients/parents refuse a vaccine, we request that they sign a declination form (e.g., www.immunize.org/catg.d/p4059.pdf) and we make sure to revisit the issue at future visits.	☐	☐	☐
7	When giving vaccinations, we inform the patient/parent when the next appointment for vaccinations is due, and we attempt to schedule the visit before they leave the office. We put this information in an electronic recall system or manual tickler.	☐	☐	☐
8	We send a reminder (e.g., by phone call, postcard, email, or text) when vaccinations are due, and we recall patients (e.g., using computerized tracking or a simple tickler system) who are overdue.	☐	☐	☐
9	If patients miss visits and can't be rescheduled quickly, we reschedule them in one to two weeks for a "shots only" visit.	☐	☐	☐

Evaluate and improve your practice's performance

		yes	no	partly
1	We routinely assess immunization levels of our patient population. We know that we can contact our state or local health department for possible assistance in performing the assessment. We share the results with all staff, and we use this information to develop strategies to improve immunization rates.	☐	☐	☐
2	Because we provide services to children/adolescents (if applicable), we enroll in the Vaccines for Children (VFC) program so that we can provide free vaccine to uninsured and other eligible children age birth through 18 years.	☐	☐	☐

REFERENCES

Administering Vaccines: Clinic Resources from IAC (www.immunize.org/clinic/administering-vaccines.asp)

Epidemiology and Prevention of Vaccine-Preventable Diseases (www.cdc.gov/vaccines/pubs/pinkbook/index.html)

Immunization Action Coalition (www.immunize.org)

Injection Safety: Information for Providers (www.cdc.gov/injectionsafety/providers.html)

National Vaccine Injury Compensation Program (www.hrsa.gov/vaccinecompensation/index.html)

Recommendations and Guidelines: Vaccine Administration (www.cdc.gov/vaccines/hcp/admin/recs-guidelines.html)

Vaccine Adverse Event Reporting System (vaers.hhs.gov/index)

Vaccine Storage and Handling Toolkit (www.cdc.gov/vaccines/hcp/admin/storage/toolkit/index.html)

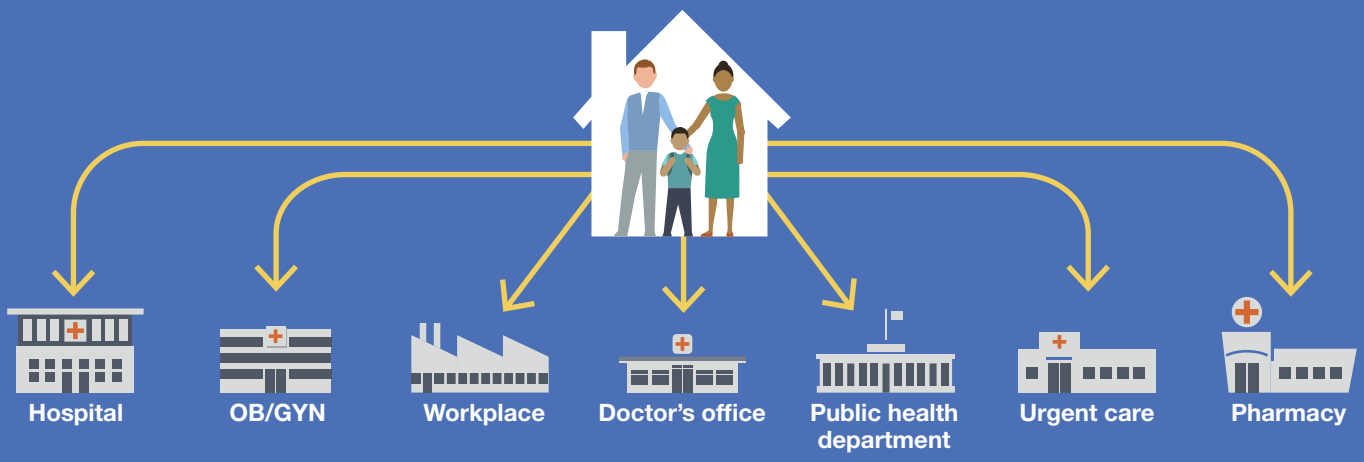
Vaccines and Immunization (www.cdc.gov/vaccines/index.html)

Immunization Action Coalition • Saint Paul, Minnesota • 651-647-9009 • www.immunize.org • www.vaccineinformation.org

www.immunize.org/catg.d/p2045.pdf • Item #P2045 (5/17)

Basics of Immunization Information Systems (IISs)

People receive vaccinations from a variety of places



These sources send vaccination records to state or city IIS

IISs provide records to patients and authorized professionals

Parents and general public use the information to enroll children in schools and day care and to determine if they need vaccinations.

Doctors and health care providers use IISs to determine which vaccinations are needed and to care for patients.

Public health uses the information to develop programs that increase vaccination coverage and decrease the harm caused by vaccine-preventable diseases.

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U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

EHR and IIS

Their Differences and How They Work Together

Only captures patient health information within the same medical organization

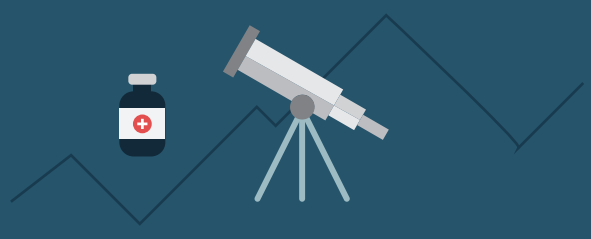
Captures immunization information for a broad population

Replaces written health records of medical encounters

Consolidates immunization records by reaching across heath care providers and networks

Supports provider decisions about a patient's care

Provides clinical decision support and vaccine forecasting

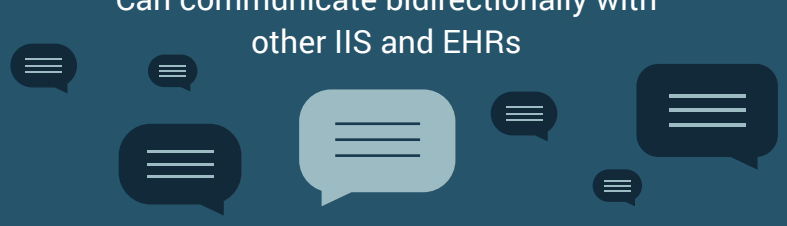


Automates and streamlines provider workflow

Identifies areas of need, where lower immunization rates exist

Can communicate bidirectionally with IIS

Can communicate bidirectionally with other IIS and EHRs



Better Together

Connectivity
IIS connect providers with a patient's full immunization history, regardless of prior networks or providers visited. When IIS are integrated into the EHR, access to this information becomes seamless. This connectivity eliminates the burden of retrieving and compiling fragmented information from past providers and pharmacies.

Visibility
Connecting providers to broader population data allows them visibility into the history and needs of the population they serve, ensuring the best outcomes in daily, clinical decision-making. Providers also gain visibility into future needs through immunization forecasting, helping organizations more strategically plan and communicate with patients through timely vaccination reminders.

Collaboration
When IIS and EHR systems share data, patient immunization records become as complete and accurate as possible. A consolidated record that follows patients throughout their lifetime prevents the patient from receiving too many or too few vaccines in the future.

Learn more about the unique capabilities of IIS and EHR at immregistries.org.

AIRA
AMERICAN IMMUNIZATION REGISTRY ASSOCIATION

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Americans' Trust in Health Information Sources: Trends and Sociodemographic Predictors

Devlon N. Jackson, PhD, MPH[1], Emily B. Peterson, PhD[2], Kelly D. Blake, ScD[2], Kisha Coa, PhD[3], and Wen-Ying Sylvia Chou, PhD, MPH[2]

Abstract

Purpose: To assess the public's trust in health information sources (ie, government health agencies, doctors, family/friends, charitable organizations, and religious leaders/organizations) from 2005 to 2015 and identify sociodemographics factors associated with high trust.

Design: Cross-sectional.

Setting: Health Information National Trends Survey, a US nationally representative publicly available data on health-related knowledge, behaviors, and attitudes.

Participants: Data included 5 iterations (2005-2015) of US adults (2005: N = 5586, 2008: N = 7764, 2011: N = 3959, 2013: N = 3185, and 2015: N = 3738).

Measures: Outcome variables were high trust in health information sources and independent variables were sociodemographics.

Analysis: A descriptive analysis was conducted to track changes in trust over the past decade. The χ^2 and multivariable logistic regression were conducted to assess sociodemographic associations in 2015.

Results: Trust in health information across all sources remained stable from 2005 to 2015. Doctors were the most trusted source, followed by government health agencies. Sociodemographics were independently associated with trust. For example, non-Hispanic blacks were more likely to trust charitable organizations (odds ratio [OR] = 2.32, confidence interval [CI] = 1.42-3.79) and religious leaders/organizations (OR = 3.57, CI = 1.20-10.57) compared to non-Hispanic whites. In addition, those with less than high school education (OR = 2.44, CI = 1.32-4.52) were more likely than college graduates to report trust in religious leaders/organizations.

Conclusion: Although there are analytic limitations to the specific time periods, the findings demonstrate that public health communication practitioners must consider the role of source credibility among priority populations when disseminating and promoting information.

Keywords

trust, health information, information sources, health communication, health promotion

Introduction

Understanding public trust in various entities has become paramount. Health-related historical events (ie, Tuskegee Syphilis Study, the 1998 retracted vaccination study) have contributed to lower public trust and given rise to many Americans' sense of suspicion and mistrust.[1-3] Studies have shown that American's trust in traditional entities such as government[2] and religious organizations/leaders has declined.[4] Since these and other entities often serve as sources of health information,[5] it is important to examine public trust; this knowledge can inform researchers and practitioners as they plan, develop, and disseminate public health messages.

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Table 1. Response Rates of HINTS Iterations (2005, 2008, 2011, 2012, 2013, 2015).[a]

HINTS Iteration	HINTS 2	HINTS 3	HINTS 4		HINTS-FDA
HINTS cycle	NA	NA	Cycle 1	Cycle 3	NA
Year survey administered	2005	2008	2011	2013	2015
Survey mode	RDD	Mail and RDD	Mail	Mail	Mail
Sample of respondents	5586	Mail: 3582 RDD: 4092	3959	3185	3738
Response rate	24.0%	Mail: 40.0% RDD: 24.2%	36.7%	35.2%	32%

Abbreviations: HINTS, Health Information National Trends Survey; RDD, random digital dial telephone survey.
[a]HINTS 4 cycles 2 and 3 did not include all of the health information sources used in this study; therefore, they were not included in this table.

In light of the observed decline of trust in entities, we sought to examine patterns of trust in primary health information sources. Our primary research aims were (1) to assess the Americans' public trust in health information sources (ie, government health agencies, doctors, family/friends, charitable organizations, and religious leaders/organizations) from 2005 to 2015; (2) identify sociodemographics factors associated with high trust.

Methods

Data Source

This analysis utilized 5 iterations of data from the National Cancer Institute's Health Information National Trends Survey (HINTS; HINTS 2—2005; HINTS 3—2008; HINTS 4 cycle 1—2011; HINTS 4 cycle 3—2013; HINTS-FDA-2015). The HINTS consist of a series of nationally representative, cross-sectional surveys of US adults aged 18 and older. The survey assesses health- and cancer-related knowledge, behaviors, and attitudes. Information regarding HINTS methodology has been published elsewhere,[6] and data sets, instruments, and methodology reports are available at http://hints.cancer.gov.

Sample

The HINTS 2-2005 data were collected through random digit dial (N = 5586). HINTS 3-2008 data were collected through a mailed questionnaire and random digit dial (N = 7764). HINTS 4 cycle 1-2011 (N = 3959), HINTS 4 cycle 3-2013 (N = 3185), and HINTS-FDA-2015 (N = 3738) data were collected through a mailed questionnaire using a random sample of US residential addresses. The response rates for each cycle year can be found in Table 1.

Measures

Trust in Health Information Sources. Trust was assessed by asking, "In general, how much would you trust information about health/medical topics from each of the following (doctor/other health-care professional; family/friends; government health agencies; charitable organizations; and religious organizations/leaders)?" The responses were dichotomized as: high trust ("a lot" and "some") and low trust ("a little" and "not at all"), based on prior research.[7] Most iterations contained all 5 sources; however, HINTS 2-2005 contained only the doctor and family/friend items.

Sociodemographic factors. Age, sex, race and ethnicity, education, income, and rural-urban status were selected for the analysis based on prior literature on trust in health information sources.[5,8,9] Additional content on how these variables were categorized is available in the footnote (Note 1).

Analysis

All analyses were conducted using SAS version 9.4. To account for the complex sample design of HINTS, sample weights were applied to address nonresponse and noncoverage bias using jackknife replication to compute variance estimates. In addition, all analyzes utilized sample weights to produce population point estimates. A descriptive analysis was conducted to examine levels of trust reported across survey years. We report the weighted proportion of HINTS respondents who reported having high trust in each source across iterations.

A separate analysis was conducted using HINTS-FDA-2015 to further examine in detail most recent data and get a snapshot of the current levels of and predictors of trust in health information sources. This analysis did not include all 5 years because 3 of the health information sources were not included in all of the 5 HINT iterations discussed in this article. In addition, we were interested in determining whether the known predictors of trust have changed. A cross-tabulation analysis was also conducted to examine the distribution of responses. The χ^2 tests were used to examine bivariate relationships. Multivariable logistic regression models were employed to assess the independent contribution of demographic characteristics on high trust across different sources.

Results

Descriptive Analyses

A third (n = 30.4%, n = 455) of the sample was 18 to 34 years of age (Table 2). A little over half (n = 2018, 50.9%) of the sample were females. Approximately 64.8% (n = 2633) of the participants self-reported as non-Hispanic white, followed by 16.1% (n = 241) reported being Hispanic. Slightly over 30% (n = 1578, 35.3%) were college educated and with an income of $75 000 or more (n = 1112, 35.2%). The majority of the

Table 2. Weighted Sample Demographics of HINTS FDA (2015) Respondents.[a]

Demographics	Weighted % n
Age	
18-34	30.4% (455)
35-49	25.0% (659)
50-64	25.6% (1226)
65 or older	19.0% (1288)
Sex	
Male	49.1% (1497)
Female	50.9% (2018)
Race/ethnicity	
Non-Hispanic white	64.8% (2633)
Non-Hispanic black	11.4% (232)
Hispanic	16.1% (241)
Non-Hispanic other	7.7% (260)
Education	
Less than HS	10.9% (237)
HS graduate	21.0% (727)
Vocational or some college	32.8% (1132)
College grad or more	35.3% (1578)
Income	
Less than $15 000	13.9% (455)
$15 000-$34 999	21.2% (715)
$35 000-$74 999	29.6% (1020)
$75 000 or more	35.2% (1112)
Health-care coverage	
Yes	91.5% (3444)
No	8.5% (207)
Rural status	
Rural	14.9% (901)
Urban	85.1% (2837)
Trust in doctors	
A lot/some	94.6% (3475)
A little/not at all	5.4% (191)
Trust in family or friends	
A lot/some	58.3% (2028)
A little/not at all	41.7% (1549)
Trust in government health agencies	
A lot/some	74.9% (2749)
A little/not at all	25.1% (868)
Charitable orgs	
A lot/some	40.4% (1383)
A little/not at all	59.6% (2202)
Religious organizations and leaders	
A lot/some	29.8% (1046)
A little/not at all	70.1% (2569)

Abbreviation: HINTS, Health Information National Trends Survey.
[a]N = 3738.

sample reported having health-care coverage (n = 3444, 91.5%) and residing in an urban area (n = 2837, 85.1%). The most trusted health information source reported was doctors (n = 3475, 94.6%) and the least trusted source of health information was religious organizations (n = 1046, 29.8%).

Levels of trust in health information across sources remained relatively stable over a 10-year period (2005-2015; see Figure 1). A comparison of different sources shows that doctors continue to serve as the most trusted source for health information (92.0%-95.3% range), followed by government

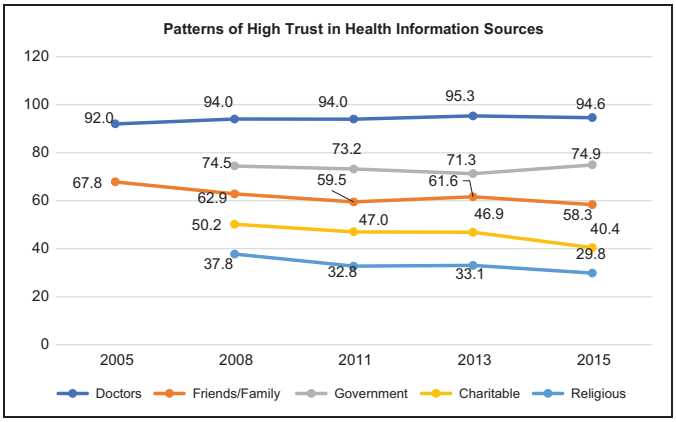

Figure 1. Weighted responses of high trust (a lot and some) in sources for health information from 2005 to 2015.

health agencies (71.3%-74.9% range), family/friends (58.3%-67.8% range), charitable organizations (40.4%-50.2% range), and finally, religious organizations/leaders (29.8%-37.8% range).

Bivariate Association Analyses (HINTS-FDA-2015)

In a preliminary bivariate analysis of the HINTS-FDA-2015 data (n = 3475), nearly 94.6% reported high levels of trust in doctors, and higher education and income were significantly associated with high trust (Table 3). Nearly 75% reported high levels of trust in government health agencies, which is also associated with higher levels of education and income. Religious organizations were the least trusted source of health information (29.8%), and race/ethnicity, education, and income were significantly associated with high trust in this health information source, non-Hispanic blacks, and those with lower levels of education and income.

Logistic Regression Analyses (HINTS-FDA-2015)

Table 4 displays multivariable logistic regression models of sociodemographic characteristics associated with high trust in sources for health information from the HINTS-FDA-2015 iteration. These models were constructed based on significant factors identified in prior studies[8,10] and in our bivariate analysis. At least one of the sociodemographic characteristics was associated with trust in 4 of the 5 health information sources (doctor, government health agencies, charitable organizations, and religious organizations/leaders). In the model assessing trust in doctors, high school graduates had a lower odds of reporting high trust (OR = 0.33, 95% CI = 0.13-0.84) compared to college graduates. Regarding trust in government health agencies, individuals with an income of $35 000 to $74 999 had significantly lower odds (OR = 0.62, 95% CI = 0.43-0.89) than those with an income of $75 000 or more to trust the government. Trust in charitable organizations found that non-Hispanic blacks had higher odds of trust (OR = 2.32, CI = 1.42-3.79) in comparison to non-Hispanic whites. Finally,

Table 3. Weighted Bivariate Associations (Weighted Percentages and Unweighted Frequencies) Between Sociodemographic Characteristics and High Trust Levels (A Lot and Some) in Sources for Health or Medical Information Among HINTS FDA (2015) Respondents.[a]

	High Trust (A Lot and Some) in Sources for Health or Medical Information				
	Doctor, 94.60%, (n = 3475)	Family or Friends, 58.30% (n = 2028)	Govt. Health Agencies, 74.90% (n = 2749)	Charitable Organizations, 40.40%, (n = 1383)	Religious Organizations and Leaders, 29.80%, (n = 1046)
Age	$P = .89$	$P = .16$	$P = .87$	$P = .009$[b]	$P = .71$
18-34	95.2% (437)	62.4% (272)	73.9% (348)	42.6% (187)	27.8% (104)
35-49	93.9% (619)	59.4% (382)	76.9% (507)	40.4% (273)	28.7% (185)
50-64	94.9% (1143)	53.2% (642)	76.0% (923)	41.5% (475)	31.5% (359)
65 or older	95.2% (1178)	57.0% (666)	75.7% (902)	35.1% (413)	30.8% (362)
Sex	$P = .75$	$P = .19$	$P = .80$	$P = .31$	$P = .17$
Male	94.6% (1388)	56.7% (768)	74.9% (1059)	38.9% (529)	27.4% (403)
Female	95.0% (1886)	60.6% (1148)	75.7% (1533)	42.0% (776)	31.4% (576)
Race/ethnicity	$P = .14$	$P = .67$	$P = .20$	**$P = .006$**[b]	**$P < .0001$**[b]
NH white	95.7% (2472)	58.4% (1453)	75.6% (1965)	37.1% (933)	23.4% (651)
NH black	96.9% (219)	51.4% (109)	81.2% (184)	58.4% (120)	52.9% (110)
Hispanic	88.9 (216)	59.5% (125)	68.5% (165)	35.7% (91)	33.5% (88)
NH other	97.1% (244)	62.0% (139)	77.6% (189)	43.8% (107)	26.4% (69)
Education	**$P = .009$**[b]	$P = .42$	**$P = .03$**[b]	$P = .76$	**$P = .006$**[b]
Less than HS	93.5% (206)	63.9% (106)	71.1% (153)	46.9% (80)	50.0% (90)
HS graduate	90.4% (649)	53.7% (386)	73.4% (493)	38.0% (264)	32.1% (243)
Vocational or some college	94.6% (1054)	59.7% (604)	72.2% (805)	40.0% (410)	27.5% (327)
College grad or more	97.3% (1510)	58.5% (896)	80.6% (1260)	41.0% (615)	25.1% (371)
Income	**$P = .0004$**[b]	$P = .89$	**$P = .004$**[b]	$P = .50$	**$P = .0001$**[b]
Less than $15 000	92.1% (400)	57.5% (240)	71.6% (303)	45.4% (174)	43.9% (168)
$15 000-$34 999	91.9% (659)	59.7% (385)	73.5% (512)	39.4% (266)	35.0% (239)
$35 000-$74 999	93.9% (954)	56.7% (558)	71.6% (760)	37.0% (365)	28.0% (274)
$75 000 or more	97.5% (1071)	59.2% (623)	81.8% (887)	41.8% (443)	21.8% (240)
Rural status	$P = .06$	$P = .10$	$P = .45$	$P = .90$	$P = .25$
Rural	91.4% (815)	54.2% (471)	73.4% (643)	40.1% (322)	33.1% (291)
Urban	95.1% (2660)	59.1% (1557)	75.2% (2106)	40.5% (1061)	29.3% (755)

Abbreviation: HINTS, Health Information National Trends Survey.
[a]N = 3738.
[b]Bold represents $P \leq .05$.

non-Hispanic blacks had higher odds of trust in religious organization (OR = 3.64, CI = 2.13-6.24) as compared to non-Hispanic whites. Additionally, lower education was predictive of higher trust in religious organizations and leaders, wherein those with less than high school education had higher odds of trust (OR = 2.44, CI = 1.32-4.52) as compared to college graduates.

Discussion

Summary

Consistent with prior research, we found that doctors remain the most trusted source for health information over the past decade in a descriptive analysis of 5 HINTS iterations.[7,8] In this role, health-care providers have a unique opportunity to provide health information to patients. Government health agencies remain the second most trusted source of health information, despite the public's general trust in government having declined in recent years.[2] However, previous work suggests that the public may have a nuanced view of the government, as individuals report higher trust for government health agencies than the federal government in general.[11]

Although our study revealed that religious organizations were trusted the least, the non-Hispanic black population and those with lower education both reported higher trust in religious organizations. Thus, public health practitioners and researchers should continue to foster and maintain relationships with faith-based organizations and those who have cultivated trusted relationships with these communities. It is an important reminder that religious organizations currently serve as sources of health information for many and can serve as effective and credible disseminators of health information. Specifically, in communities of color like the non-Hispanic black community, religious organizations have played an integral role in their health and other health-related issues.[12] These religious institutions can have a major impact on communities that are often times disproportionately diagnosed with many preventable health conditions. Conversely, if the health information being shared by religious leaders is not evidence-based,

Table 4. Weighted Multivariable Logistic Regression Models of Predictors for High Trust Levels in Sources for Health or Medical Information Sources Among HINTS FDA Cycle (2015) Respondents.

	High Level (A lot and Some) of Trust in Sources for Health or Medical Information									
	Doctor		Family or Friends		Govt. Health Agencies		Charitable Organizations		Religious Organizations and Leaders	
	OR 95% (CI)	*P*	OR 95% (CI)	*P*	OR 95% (CI)	*P*	OR 95% (CI)	*P*	OR 95% (CI)	*P*
Age		.5		.15		.88		.29		.51
18-34	0.93 (0.42-2.06)	.86	1.27 (.92-1.76)	.15	.90 (.61-1.33)	.59	1.23 (.85-1.78)	.26	.77 (.50-1.20)	.24
35-49	0.64 (0.32-1.29)	.21	1.14 (.84-1.54)	.4	1.02 (.68-1.53)	.93	1.25 (.87-1.79)	.23	1.02 (.74-1.43)	.88
50-64	0.80 (0.50-1.27)	.33	.87 (.65-1.17)	.34	1.05 (.80-1.38)	.71	1.22 (.95-1.57)	.12	1.07 (.79-1.43)	.66
65 or older	Ref		Ref		Ref		Ref		Ref	
Sex		.77		.31		.99		.66		.48
Male	Ref		Ref		Ref		Ref		Ref	
Female	1.08 (0.62-1.88)		1.14 (.88-1.49)		1.00 (.69-1.45)		1.06 (.82-1.37)		1.12 (.82-1.53)	
Race and ethnicity		.18		.76		.4		**.01**[a]		**.0002**[a]
NH white	Ref		Ref	.35	Ref		Ref		Ref	
NH black	1.42 (0.52-3.89)	.48	.75 (.44-1.31)	.31	1.30 (.67-2.49)	.43	**2.32 (1.42-3.79)**	**.001**	***3.64 (2.13-6.24)***	**.<0001**[a]
Hispanic	0.43 (0.17-1.10)	.08	.95 (.61-1.47)	.8	.74 (.45-1.20)	.21	.90 (.57-1.44)	.66	1.47 (.85-2.56)	.17
NH other	1.12 (0.34-3.72)	.85	1.07 (.66-1.75)	.77	.92 (.54-1.56)	.75	1.29 (.78-2.12)	.31	1.51 (.85-2.67)	.16
Education		**.04**[a]		.33		.14		.3		**.03**[a]
Less than HS	1.14 (0.32-4.14)	.84	1.36 (.72-2.56)	.33	.76 (.33-1.76)	.52	1.36 (.70-2.63)	.36	**2.44 (1.32-4.52)**	**.005**[a]
HS graduate	**0.33 (0.13-0.84)**	**.02**[a]	.84 (.57-1.24)	.36	.78 (.49-1.23)	.27	.87 (.58-1.31)	.51	1.25 (.81-1.92)	.31
Vocational or some college	0.54 (0.25-1.17)	.12	1.10 (.84-1.44)	.5	.66 (.46-.94)	.02	1.12 (.88-1.42)	.36	1.27 (.88-1.84)	.2
College grad or more	Ref		Ref		Ref		Ref		Ref	
Income		.1		.09		**.05**[a]		.42		.15
Less than $15 000	0.39 (0.16-0.95)	.04	.86 (.48-1.54)	.59	.64 (.35-1.20)	.16	1.05 (.63-1.74)	.85	1.91 (1.08-3.35)	.03
$15 000-$34 999	0.51 (0.23-1.14)	.1	1.01 (.70-1.45)	.96	.77 (.48-1.22)	.25	.84 (.57-1.23)	.36	1.27 (.76-2.13)	.35
$35 000-$74 999	0.52 (0.24-1.13)	.1	.94 (.69-1.29)	.71	**.62 (.43-.89)**	**.01**[a]	.80 (.58-1.10)	.16	1.18 (.76-1.83)	.45
$75 000 or more	Ref		Ref		Ref		Ref		Ref	
Rural status		.06		.44		.74		.37		.08
Urban	Ref		Ref		Ref		Ref		Ref	
Rural	0.53 (0.27-1.04)		0.88 (0.64-1.22)		1.05 (0.77-1.44)		1.15 (0.84-1.58)		1.43 (0.96-2.13)	

Abbreviations: CI, confidence interval; HINTS, Health Information National Trends Survey; OR, odds ratio.
[a]Bold represents $P \leq .05$.

misinformation can quickly be disseminated. Therefore, collaborations between public health practitioners, researchers, and these religious organizations are key in dissemination.

While findings for trust in health information had been reported in earlier studies, for age and geographic location,[9,13] our study did not find differential levels of trust for any source by age, gender, or geography. These data should be interpreted in light of some limitations. In addition, future studies should consider assessing additional variables such as language, self-reported health status, and health insurance coverage. Although prior studies have not included these variables or found associations with trust, future studies should consider how these variables may mediate trust and other health behaviors to better inform health promotion interventions.

Limitations

HINTS data are cross-sectional, so temporality and causation cannot be inferred. Moreover, due to the various data collection modes (random digital dial telephone survey and mailed survey) utilized across the HINTS iterations and the 3 health information sources that were not included in all 5 iterations, we were unable to combine all iterations to conduct a longitudinal time-trend design and instead reported weighted point estimates for trust in sources at 5 time points in a 10-year period.

Significance

In an evolving media environment increasingly dominated by misinformation and echo chambers, it is particularly important to consider the important role of trust in sources of health information. This trust (or mistrust) may affect how individuals perceive and respond to certain health messages. The findings discussed in this study can both inform health promotion interventions (including efforts to build and sustain trust) and offer a more nuanced understanding of intervention efficacy and effectiveness in specific communities.

SO WHAT?

What Is Already Known on This Topic?

Historically, sources such as doctors are considered the preferred choice for health information and some sources vary in trust among certain populations (eg, by race/ethnicity, education, income)

What Does This Article Add?

This study reveals that despite the recent and historical events that have impacted the US public's trust in general, commonly trusted sources for health information among the general population and within subgroups have remained consistent

What Are the Implications for Health Promotion Practice or Research?

As confidence in general information sources shifts, it is important that researchers continue to monitor levels of public trust in sources that disseminate health information. It is essential for researchers and public health practitioners to understand how the public may respond to certain health-related initiatives and messages disseminated by particular information sources. These findings can inform health promotion interventions (including efforts to build and sustain trust) and offer a more nuanced understanding of intervention efficacy and effectiveness in specific communities

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Note

1. Age categories included 18 to 29, 30 to 49, 50 to 69, and 70 years and older. Race and ethnicity were categorized as non-Hispanic white, non-Hispanic black, Hispanic, and non-Hispanic other. Education was categorized as less than high school education, high school graduate, vocational training or some college, and college graduate or more. Income was categorized as less than $15 000, $15 000-$34 999, $35 000-$74 999, and $75 000 or more. Rural and urban designations were assigned to each respondent using a derived variable based on the US Department of Agriculture's Rural-Urban Continuum Codes. The urban category (codes 1-3) represents individuals that live in metro counties with populations of 250 000 or higher. Participants that reside in nonmetro counties (codes 4-9) were included in our rural designation.

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Common Immunization Myths and Misconceptions

Talking Points and Resources
for Busy Healthcare Professionals

July 2018 • Item #S8035

Background

Parents, patients, and healthcare professionals all have misconceptions about vaccinations.

- More patients and parents are questioning the safety and effectiveness of vaccines. Your responses to them require knowledge, tact, and time.
- Healthcare providers can miss opportunities to vaccinate by believing false contraindications and following unnecessary rules.

Background (cont.)

This presentation will provide:

- information that addresses common concerns or misconceptions about vaccination. Concerns and misconceptions of patients, parents, and healthcare professionals will be reviewed.
- links to related evidence-based resources – some are intended as background information for healthcare professionals and others for patients/parents.

Patient and Parent Myths

MYTH: MMR causes autism

- Many large, well-designed studies have found no link between MMR and autism.
- Autism usually becomes apparent around the same time MMR is given – no evidence of causality.
- Autism probably has multiple components, including genetics (e.g., one study found that if one identical twin had autism, the chance that the second twin had autism was greater than 90%, but with fraternal twins the chance was less than 10%.)

MYTH: MMR causes autism (cont.)

- The 1998 study by Andrew Wakefield that started this concern was based on 12 children who were preselected for study.
- In 2004, 10 of the 13 authors of this study retracted the study's interpretation.

MYTH: MMR causes autism (cont.)

- On 2/2/2010, the editors of *The Lancet* retracted the paper following the ruling of the U.K.'s General Medical Council that stated the primary author's conduct regarding his research was "dishonest" and "irresponsible" and that he had shown a "callous disregard" for the suffering of children involved in his studies. Wakefield was subsequently removed from the U.K medical register and is no longer licensed to practice medicine.
- In January 2011, the BMJ published a series of articles showing Wakefield's work was not just bad science, but deliberate fraud.

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- IAC's "Clear Answers & Smart Advice about Your Baby's Shots" by Ari Brown, MD, FAAP www.immunize.org/catg.d/p2068.pdf
- CDC's "Measles, Mumps, and Rubella (MMR) Vaccine Safety Studies" www.cdc.gov/vaccinesafety/vaccines/mmr/mmr-studies.html
- The Fraud Behind the MMR Scare *(IAC web section)* www.immunize.org/bmj-deer-mmr-wakefield
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- AAP's "Vaccine Safety: Examine the Evidence" www.aap.org/en-us/Documents/immunization_vaccine_studies.pdf

10

MYTH: Giving an infant multiple vaccines can overwhelm the immune system

- Babies begin being exposed to immunological challenges immediately at the time of birth. As babies pass through the birth canal and breathe, they are immediately colonized with trillions of bacteria, which means that they carry the bacteria in their bodies but aren't infected by them. Healthy babies constantly make antibodies against these bacteria and viruses.

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MYTH: Giving an infant multiple vaccines can overwhelm the immune system (cont)

- Vaccines use only a tiny proportion of a baby's immune system's ability to respond; though children receive more vaccines than in the past, today's vaccines contain fewer antigens (e.g., sugars and proteins) than previous vaccines. Smallpox vaccine alone contained 200 proteins; the 14 currently recommended routine vaccines contain fewer than 150 immunologic components.

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- "Vaccines and Autism: A Tale of Shifting Hypotheses" by Paul Offit, MD and Jeffery Gerber, MD http://cid.oxfordjournals.org/content/48/4/456.full

13

MYTH: It's better to space out vaccines using an alternative schedule

- Delaying vaccines increases the time children will be susceptible to diseases
  - In 2014, there were 665 cases of measles reported in the U.S. The majority of people who got measles were unvaccinated. Measles is still common in many parts of the world, including some countries in Europe, Asia, the Pacific, and Africa, and can easily be transported.
  - In 2014, 32,971 cases of pertussis were reported to CDC, and many more cases were undiagnosed.
- Requiring many extra appointments for vaccination increases the stress for the child and may lead to a fear of visits to the clinic.
- There is no evidence that spreading out the schedule decreases the risk of adverse reactions.

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- AAP's "The Childhood Immunization Schedule: Why Is It Like That?" www.aap.org/en-us/advocacy-and-policy/Documents/Vaccineschedule.pdf
- VEC's "Too Many Vaccines? What you should know" http://media.chop.edu/data/files/pdfs/vaccine-education-center-too-many-vaccines.pdf
- IOM Report: "Multiple Immunizations and Immune Dysfunction" www.nap.edu/read/10306/chapter/1
- "Parental Refusal of Pertussis Vaccination is Associated with an Increased Risk of Pertussis Infection in Children" Gianz et al http://pediatrics.aappublications.org/content/123/6/1445.abstract

15

MYTH: Natural infection is better than immunization

- Natural infection usually does not cause better immunity than vaccination.
- However, the price paid for natural disease can include:
  - paralysis
  - permanent brain damage
  - liver failure
  - liver cancer
  - deafness
  - blindness
  - loss of limbs
  - death

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References

- "Natural Infection vs. immunization" by Paul Offit, MD www.chop.edu/centers-programs/vaccine-education-center/vaccine-safety/immune-system-and-health
- Photos of people with vaccine-preventable diseases www.immunize.org/photos
- Real-life accounts of people who have suffered or died from vaccine-preventable diseases www.immunize.org/reports

17

MYTH: Thimerosal causes autism

- The form of mercury found in thimerosal is ethylmercury (EM), not methylmercury (MM). MM is the form that has been shown to damage the nervous system.
- Although no evidence of harm has ever been demonstrated, thimerosal was taken out of vaccines as a precaution, and "because it can be" (due to single dose vials).
- Since 2001, with the exception of a few influenza vaccine products, thimerosal has not been used as a preservative in any routinely recommended childhood vaccines.

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MYTH: Thimerosal causes autism (cont)

- Multiple studies have shown that thimerosal in vaccines does not cause autism when comparing children who received thimerosal-containing vaccines and those who received vaccines not containing thimerosal.
- Studies of three countries compared the incidence of autism before and after thimerosal was removed from vaccines (in 1992 in Europe and 2001 in the U.S.). There was no decrease in autism with the switch to thimerosal-free vaccines.

19

References

- CDC's Vaccine Safety Concerns web page
  www.cdc.gov/vaccinesafety/concerns
- IAC's collection of thimerosal-related resources
  www.immunize.org/thimerosal
- Institute of Medicine reports on thimersal
  www.nap.edu/books/030909237X/html and
  www.nap.edu/read/10208/chapter/1
- CDC's "Understanding Thimerosal, Mercury, and Vaccine Safety"
  www.cdc.gov/vaccines/hcp/patient-ed/conversations/downloads/vacsafe-thimerosal-color-office.pdf

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References (cont.)

- Vaccine Education Center's (VEC's) "Thimerosal: What you should know"
  http://media.chop.edu/data/files/pdfs/vaccine-education-center-thimerosal.pdf
- VEC's "Vaccines and Autism: What you should know"
  http://media.chop.edu/data/files/pdfs/vaccine-education-center-autism.pdf
- CDC's Studies on Thimerosal in Vaccines
  www.cdc.gov/vaccinesafety/pdf/cdcstudiesonvaccinesandautism.pdf
- "Vaccines and Autism: A Tale of Shifting Hypotheses" by Paul Offit, MD and Jeffery Gerber, MD
  http://cid/oxfordjournals.org/content/48/4/456.full

21

MYTH: Ingredients in vaccines are harmful

Aluminum

- Aluminum is used in some vaccines as an adjuvant – an ingredient that improve the immune response. Adjuvants can allow for use of less antigen. They have been used for this purpose for more than 70 years.
- Aluminum is the most common metal found in nature. It is in the air and in food and drink. Infants get more aluminum through breast milk or formula than vaccines.
- Most of the aluminum taken into the body is quickly eliminated.

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MYTH: Ingredients in vaccines are harmful (cont.)

Formaldehyde

- Formaldehyde is used to detoxify diphtheria and tetanus toxins or to inactivate a virus.
- The tiny amount which may be left over from these steps in making vaccines is safe.
- Formaldehyde is also found in products like paper towels, mascara, and carpeting.
- Humans normally have formaldehyde in their blood streams at levels higher than is found in vaccines.

23

MYTH: Ingredients in vaccines are harmful (cont.)

Miscellaneous

- Antibiotics are present in some vaccines to prevent bacterial contamination when the vaccine is made.
- Additives such as gelatin, albumin, sucrose, lactose, MSG, and glycine help the vaccine stay effective while being stored.
- Trying to make vaccines without adjuvants, additives, and preservatives is difficult – these ingredients keep vaccine safe and effective.

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References

- VEC's "Aluminum in Vaccines: What you should know" http://media.chop.edu/data/files/pdfs/vaccine-education-center-aluminum.pdf
- VEC's "Vaccine Ingredients: What you should know" http://media.chop.edu/data/files/pdfs/vaccine-education-center-vaccine-ingredients.pdf
- IAC's "Adjuvants and Ingredients" web section www.immunize.org/concerns/adjuvants.asp
- AAP's "Questions and Answers about Vaccine Ingredients" https://www.healthychildren.org/English/safety-prevention/immunizations/Pages/Vaccine-Ingredients-Frequently-Asked-Questions.aspx

25

References (cont.)

- CDC's "Vaccine Excipient & Media Summary, by Excipient" https://cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf
- CDC's "Ingredients of Vaccine – Fact Sheet" www.cdc.gov/vaccines/vac-gen/additives.htm
- IAC's Package Inserts web section www.immunize.org/fda

26

MYTH: Disease rates have dropped due to factors other than vaccination

- Better living conditions (less crowded housing, better nutrition, etc.) have had an impact on disease rates. BUT, the only real decrease in a VPD has occurred after the introduction of a vaccine to prevent it.
- This is also true for newer vaccines like Hib (1987) and varicella (1995), which were introduced during times of modern hygiene.

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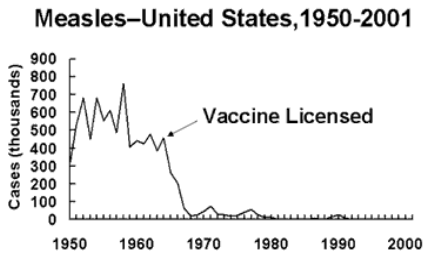
MYTH: Disease rates have dropped due to factors other than vaccination (cont.)

- When some developed countries (U.K., Sweden, Japan) stopped using DTP vaccine, their pertussis rates jumped dramatically.
- Several recent outbreaks of measles, pertussis, and varicella in the U.S. have been traced to pockets of unvaccinated children in states that allow personal belief exemptions. When vaccination rates go down, disease rates to up.

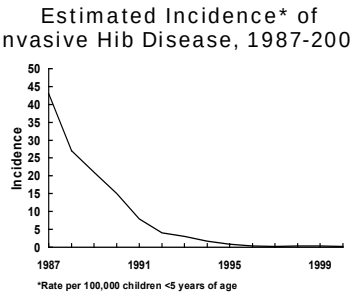
28

Example: Measles



29

Example: *Haemophilus influenzae* type b



30

References

- HHS's "Vaccine Works"
  www.vaccines.gov/basics/work/index.html
- CDC's "What Would Happen if We Stopped Vaccinations?"
  www.cdc.gov/vaccines/vac-gen/whatifstop.htm
- IAC's "Personal belief exemptions for vaccination put people at risk. Examine the evidence for yourself."
  www.immunize.org/catg.d/p2069.pdf

31

MYTH: Mandatory vaccination violates civil rights

- Massachusetts enacted the first mandatory vaccination law in the U.S. in 1809.
- Vaccination laws have been found to be constitutional in U.S. courts. Seminal case was *Jacobson v. Massachusetts* in 1905.
- All states offer medical exemptions.
- Parents need to be aware that if they don't vaccinate their children, they are putting them, and their contacts, at risk of serious disease.
- Unvaccinated children often have to stay home from school or daycare during outbreaks.

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References

- IAC's "What if you don't immunize your child?"
  www.immunize.org/catg.d/p4017.pdf
- IAC's "Decision to Not Vaccinate My Child" *(declination form)*
  www.immunize.org/catg.d/p4059.pdf
- "Personal belief exemptions for vaccination put people at risk"
  www.immunize.org/catg.d/p2069.pdf
- "Sample Vaccine Policy Statement"
  www.immunize.org/catg.d/p2067.pdf
- IAC's Mandates and Exemptions web page
  www.immunize.org/laws/exemptions.asp

33

MYTH: Abortions are required to produce vaccines

- It's true that production of varicella, rubella, rabies, and hepatitis A vaccines involves growing viruses in human cell culture.
- Two human cell lines provide these cultures; they were developed from two legally aborted fetuses in the 1960s.
- The donor fetuses were not aborted for the purpose of obtaining these cells.
- The same cell lines have been used for more than 40 years – no new fetal tissue is required.

34

References

- IAC's web page about ethical and religious objections to vaccination
  www.immunize.org/concerns/religious.asp
- Why Were Fetal Cells Used to Make Certain Vaccines?
  www.chop.edu/news/news-views-why-wer-fetal-cells-used-make-certain-vaccines?utm_term=new+view&utm_content=vaccine+hesitancy&utm_campaign=vecupdatesApr2017

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MYTH: VAERS data prove that vaccines are dangerous

VAERS data cannot "prove" anything.

- Anyone can report anything…not proof of causality is required.
- Only reports of special interest (e.g., hospitalizations) are verified. When checked, many reports are not accurate.
- Reports include many non-serious reactions.
- The number of reported adverse events is influenced by publicity.
- VAERS is properly used to detect early warning signals and generate hypotheses.

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References

- Vaccine Adverse Events Reporting Systems (VAERS)
  www.vaers.hhs.gov
- CDC's Vaccine Safety Monitoring web page
  www.cdc.gov/vaccinesafety/Vaccine_Monitoring/Index.html
- CDC's "Ensuring the Safety of Vaccines in the United States"
  www.cdc.gov/vaccines/hcp/patient-ed/conversations/downloads/vacsafe-ensuring-color-office.pdf
- CDC's "Understanding the Vaccine Adverse Event Reporting System (VAERS)"
  www.cdc.gov/vaccines/hcp/patient-ed/conversations/downloads/vacsafe-vaers-color-office.pdf
- WHO's "Causality assessment of adverse events following immunization"
  www.who.int/vaccine_safety/causality/en

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Good resources FOR PROVIDERS talking to parents and patients

- IAC's Talking about Vaccines web section
  www.immunize.org/talking-about-vaccines
- IAC's Responding to Parents web section
  www.immunize.org/talking-about-vaccines/responding-to-parents.asp
- CDC's Provider Resources for Vaccine Conversations with Parents web section
  www.cdc.gov/vaccines/hcp/conversations
- Vaccine Education Center
  www.chop.edu/centers-programs/vaccine-education-center
- AAP's immunization website
  www.aap.org/immunization
- National Adult and Influenza Immunization Summit
  www.izsummitpartners.org

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Good resources FOR PARENTS

- IAC's handouts for communicating with parents
  www.immunize.org/handouts/discussing-vaccines-parents.asp
- IAC's website for the public
  www.vaccineinformation.org
- CDC's fact sheets on vaccine-preventable diseases for parents
  www.cdc.gov/vaccines/hcp/conversations/prevent-diseases/index.html
- CDC's "Parents Guide to Childhood Immunization"
  www.cdc.gov/vaccines/pubs/parents-guide
- Vaccine Education Center's handouts for parents and patients
  www.chop.edu/centers-programs/vaccine-education-center/resources/vaccine-and-vaccine-safety-related-qa-sheets
- Every Child By Two's websites
  www.ecbt.org and www.vaccinateyourfamily.org

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Good resources FOR ADULT PATIENTS

- IAC's handouts related to adult immunization
  www.immunize.org/handouts/adult-vaccination.asp
- IAC's website for the public
  www.vaccineinformation.org
- VEC's handouts on hepatitis A, meningococcal, HPV, influenza, shingles, and Tdap
  www.chop.edu/center-programs/vaccine-education-center/resources/vaccine-and-vaccine-safety-related-qa-sheets
- VEC's "Vaccines and Adults" booklet
  http://media.chop.edu/data/files/pdfs/vaccine-education-center-vaccines-adults.pdf
- National Foundation for Infectious Diseases
  www.adultvaccination.org
- CDC's Vaccine Information for Adults web section
  www.cdc.gov/vaccines/adults

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Don't worry about every possible question

- Be able to recommend good websites and handouts for patients/parents.
- Be aware of major vaccine-critical groups and individuals and become familiar with their websites. For example, the name National Vaccine Information Center sounds official and positive about vaccines, but it is not.
- Be ready to answer the most common questions – many concerns haven't changed in over 200 years!
- Remember, it's acceptable to say you'll look into a question and get back to the patient with more information.
- It's worth your time – people respect the opinion of their healthcare providers.

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Provider Myths

Background

- Vaccination contraindications and precautions are complicated, and the many vaccines and their recommendations can cause confusion that leads to misconceptions.
- Providers who are concerned about vaccinating properly frequently err on the side of caution.
- Unfortunately, misconceptions can lead to missed opportunities to vaccinate.

43

Provider Myths

MYTH
Vaccines can't be given to people who are sick.

FACT
Mild acute illness with or without fever is not a contraindication to vaccination. Neither is antibiotic treatment, recent exposure to an infectious disease, or convalescing from an illness.

44

Provider Myths

MYTH
Providers need to check vital signs before vaccinating.

FACT
ACIP does not recommend routinely checking temperature or other vital signs before vaccination. Mild illness is not a reason to withhold vaccination, and requiring extra steps can be a barrier to immunization.

45

Provider Myths

MYTH
There is a limit to the number of vaccines that can be given at the same visit.

FACT
No upper limit has been established regarding the number of vaccines that can be administered in one visit. ACIP recommends administration of all recommended vaccines at the same visit.

46

Provider Myths

MYTH
Figuring out which vaccine can be given at a single visit is complicated.

FACT
- Almost all* routine vaccines can be given simultaneously (at the same visit, not in the same syringe).
- If two live virus vaccines are *not* given at the same visit, then they need to be separated by at least 4 weeks.
- Inactivated vaccines can be given at the same time, or any time before or after, another inactivated or live vaccine.

*next slide

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Provider Myths (cont.)

There are two exceptions to these general rules:

1) If both PCV13 and PPSV23 are indicated, these vaccines should not be given at the same visit. For adults age 19–64 who are receiving both vaccines due to a high-risk condition, the PCV13 should be given first followed by PSV23 at least 8 weeks later. If PPSV23 has already been given, wait 8 weeks (for a child) or 1 year (for an adult age 19 years or older) before giving PCV13 to avoid interference between the 2 vaccines. For adults age 65 and older who are receiving both PCV13 and PPSV23 as part of the routine recommendation, PCV13 should be given first and PPSV23 a year later. This will ensure that Medicare will cover both.
2) A person with anatomic or functional asplenia should receive both pneumococcal conjugate vaccine (PCV13) and meningococcal conjugate vaccines (MenACWY). If *Menactra* brand MenACWY is used, the person should first receive all recommended doses of PCV13, then *Menactra* at least 4 weeks later. *Menveo* brand MenACWY can be given at the same time or at any time before or after PCV13.

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Provider Myths

MYTH
Vaccines can't be given to women who are breastfeeding.

FACT
All vaccines can be given to women who are breastfeeding (yes, even live vaccines!), with the exception of smallpox vaccine.

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Provider Myths

MYTH
Live virus vaccines (live zoster, varicella, MMR, and LAIV) should not be given to contacts of pregnant women or to contacts of immunocompromised people.

FACT
False. The only concern would be in the rare instance when a person develops a varicella-like rash after receiving varicella or live zoster vaccine. Then the vaccinee should avoid close contact with the unvaccinated infant or immunocompromised person until the rash resolves.

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Provider Myths

MYTH
Pregnant women should never get vaccines.

FACT
Although pregnant women should not receive LIVE vaccines, influenza and Tdap are recommended during pregnancy. Other inactivated vaccines may or may not be administered, depending on the mother's risk factors and vaccination status. HPV vaccine has not been sufficiently studied, so it should not be administered during pregnancy at this time.

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Provider Myths

MYTH
Pregnant women and infants need to get thimerosal-free influenza vaccines.

FACT
There is no scientific evidence that thimerosal in vaccines, including influenza vaccines, is a cause of adverse events, unless the patient has a systemic allergy to thimerosal. However, there are a few states that have banned the use of influenza vaccines containing thimerosal when given to people of certain age groups.

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Provider Myths

MYTH
Tdap can't be administered if a person has received Td in the last 5 years.

FACT
There is no "minimum interval" one needs to wait between receiving Td and Tdap.

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Background Resources for Providers

- IAC's ACIP Recommendations web section
  www.immunize.org/acip
- IAC's *Ask the Experts* web section
  www.immunize.org/askexperts
- IAC's Vaccine Information Statement (VIS) web section
  www.immunize.org/vis
- IAC's educational materials web section
  www.immunize.org/handouts
- IAC's "Summary of Recommendations for Adult Immunization"
  www.immunize.org/catg.d/p2011.pdf
- IAC's "Summary of Recommendations for Child/Teen Immunization"
  www.immunize.org/catg.d/p2010.pdf

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Background Resources for Providers

- ACIP's "General Best Practice Guidelines for Immunization" www.cdc.gov/vaccines/hcp/acip-recs/general-recs/downloads/general-recs.pdf
- CDC's "Pink Book" (*Epidemiology and Prevention of Vaccine-Preventable Diseases*) www.cdc.gov/vaccines/pubs/pinkbook/index.html
- CDC's "Contraindications and Precautions" www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.htm.
- NVAC's "Standard for Adult Immunization Practice" www.cdc.gov/vaccines/hcp/adults/for-practice/standards/index.html

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Questions

- Write the CDC experts at nipinfo@cdc.gov
- Write IAC at admin@immunize.org
- Read archived *Ask the Experts Q&As* at www.immunize.org/askexperts
- Subscribe to *IAC Express* for weekly updates on vaccine recommendations, licensures, and resources at www.immunize.org/subscribe

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Need Help Responding to Vaccine-Hesitant Parents?

Science-based materials are available from these respected organizations

American Academy of Pediatrics (AAP)

Healthcare providers can find numerous resources on the AAP's website to help with parents and caregivers who have questions about vaccinating their child at www.healthychildren.org/english/safety-prevention/immunizations/pages/default.aspx. When parents cannot be convinced, consider using AAP's Refusal to Vaccinate form at www.aap.org/en-us/documents/immunization_refusalto-vaccinate.pdf.

California Department of Public Health

The Immunization Branch of the California Department of Public Health has developed several excellent provider pieces that discuss common questions parents may have regarding vaccines for their children. These include

- "Vaccine Safety: Answers to Parents' Top Questions" – www.eziz.org/assets/docs/IMM-916.pdf
- "Community Immunity" – www.eziz.org/assets/docs/IMM-1056.pdf

Centers for Disease Control and Prevention (CDC)

Among CDC's many online immunization resources is the "Parent's Guide to Childhood Immunization," a 64-page booklet that can be ordered or printed at www.cdc.gov/vaccines/pubs/parents-guide. In addition, visit CDC's "Talking to Parents about Vaccines" web section at www.cdc.gov/vaccines/hcp/conversations/conv-materials.html.

Other CDC materials, designed to help healthcare providers work with hesitant parents, include the following:

- "If You Choose Not to Vaccinate Your Child, Understand the Risks and Responsibilities" – www.cdc.gov/vaccines/hcp/patient-ed/conversations/downloads/not-vacc-risks-color-office.pdf
- "Infant Immunizations FAQs" – www.cdc.gov/vaccines/parents/parent-questions.html

Immunization Action Coalition (IAC)

IAC's Talking about Vaccines web section provides healthcare professionals with top vaccination resources from trusted sources such as CDC, AAP, IAC, VEC, and many more. Visit www.immunize.org/talking-about-vaccines. Refer parents to IAC's website for the public at www.vaccineinformation.org.

IAC has developed several patient handouts for vaccine-hesitant parents. These include:

- "Clear Answers and Smart Advice About Your Baby's Shots," an excerpt from the popular book "Baby 411" by Dr. Ari Brown – www.immunize.org/catg.d/p2068.pdf
- "Decision to Not Vaccinate My Child" – www.immunize.org/catg.d/p4059.pdf
- "Reliable Sources of Immunization Information: Where Parents Can Go to Find Answers!" – www.immunize.org/catg.d/p4012.pdf
- "Vaccines Work!" – www.immunize.org/catg.d/p4037.pdf

Institute for Vaccine Safety, Johns Hopkins University

The Institute for Vaccine Safety collects vaccine-specific safety information. Of particular interest is its "Components of Vaccines" section, which contains tables specifying the contents of various vaccines: www.vaccinesafety.edu/components.htm.

Vaccinate Your Family (formerly Every Child By Two)

Created by Vaccine Your Family, www.vaccinateyourfamily.org/questions-about-vaccines focuses on answering parents' commonly asked questions about vaccines. It features video clips and links to current vaccine news stories.

Vaccine Education Center (VEC) Children's Hospital of Philadelphia

VEC offers handouts in English and Spanish as well as four colorful booklets covering immunization of infants, teens, and adults, as well as one about vaccine safety. These educational materials can be downloaded at www.chop.edu/centers-programs/vaccine-education-center/resources. VEC has developed a number of patient handouts covering vaccine topics of interest. These include the following:

- "Vaccine Safety: Are Vaccines Safe?" – www.chop.edu/centers-programs/vaccine-education-center/vaccine-safety/are-vaccines-safe
- "Vaccine Safety: Dosing Safety" – www.chop.edu/centers-programs/vaccine-education-center/vaccine-safety/dosing-safety
- "Vaccine Safety: Immune System and Health – www.chop.edu/centers-programs/vaccine-education-center/vaccine-safety/immune-system-and-health
- "Vaccine Ingredients" – www.chop.edu/centers-programs/vaccine-education-center/vaccine-ingredients

For parents with concerns about vaccines and autism

AAP has issued a statement that can be printed at www.healthychildren.org/English/health-issues/conditions/Autism/Pages/Where-We-Stand-Autism.aspx. Parents may wish to investigate further at www.healthychildren.org/English/health-issues/conditions/Autism/Pages/default.aspx IAC also recommends these books:

- *Autism's False Prophets: Bad Science, Risky Medicine, and the Search for a Cure,* by Paul A. Offit, MD
- *Unstrange Minds: Remapping the World of Autism,* by Roy Richard Grinker, PhD

And, here are two more well-researched handouts for parents, one from IAC and another from VEC:

- "MMR Vaccine Does Not Cause Autism: Examine the Evidence!" – www.immunize.org/catg.d/p4026.pdf
- "Vaccines and Autism: What you should know" – https://media.chop.edu/data/files/pdfs/vaccine-education-center-autism.pdf

immunization action coalition
IAC
immunize.org

Saint Paul, Minnesota ▪ 651-647-9009 ▪ www.immunize.org ▪ www.vaccineinformation.org

www.immunize.org/catg.d/p2070.pdf ▪ Item #P2070 (5/19)

Reviewed January 2019

Preparing for Questions Parents May Ask about Vaccines

Many parents won't have questions about vaccines when you give your strong recommendation and use language that assumes parents will accept vaccines for their child.

If a parent questions your recommendation, this does not necessarily mean they will not accept vaccines. They consider you their most trusted source of information when it comes to vaccines and sometimes parents simply want your answers to their questions. This sheet outlines some of the topics most parents ask about and tips for how to answer their questions.

Questions about the vaccine schedule and number of vaccines

Some parents may be concerned that there are too many vaccines or that their child will receive too many at one time. But, they may not understand that following the recommended vaccine schedule provides the best protection at the earliest possible time against serious diseases that may affect infants early in life.

Parents may ask: ***Can it harm my child to get several vaccines at one time? Does my child need all of the vaccines recommended?*** To respond, you can:

- Share that no evidence suggests that receiving several vaccines at one time will damage or overwhelm a healthy child's immune system.
- Explain what antigens are (parts of germs) and emphasize the small amount of antigens in vaccines compared to the antigens babies encounter every day in their environment.
- Remind parents that they must start each vaccine series on time to protect their child as soon as possible and their child must complete each multi-dose series for the best protection. There are no data to support that spacing out vaccines offers safe or effective protection from these diseases.

"There's no proven danger in getting all recommended vaccines today. Any time you delay a vaccine, you leave your baby vulnerable to disease. It's really best to stay on schedule."

Questions about whether vaccines are more dangerous for infants than the diseases they prevent

Because vaccines are very effective, many parents have not seen a case of a vaccine-preventable disease firsthand. Therefore, they may wonder if vaccines are necessary and if the risks of vaccinating infants outweigh the benefits of protection from vaccine preventable diseases.

Parents may ask: ***Are these diseases that dangerous? Is it likely that my baby will catch this disease? Will ingredients in vaccines hurt my baby more than possibly getting the disease could?*** To respond, you can:

- Share your experience of how these serious diseases still exist and explain that outbreaks still occur in the U.S. For example:
  - From year to year, measles cases in the U.S. can range from roughly less than 100 to a couple hundred. However, in 2014, health departments reported cases in 667 people from 27 states.
  - Between 1970-2000, health officials reported fewer than 8,000 cases of whooping cough each year in the U.S. But since 2010, health officials have reported between 15,000 and 50,000 cases of whooping cough each year to CDC.
- Teach parents that diseases eliminated in the U.S. can infect unvaccinated babies if travelers bring the diseases from other countries. If you need up-to-date information on specific diseases, share *Disease Fact Sheets* with parents.
- Remind parents that many vaccine preventable diseases can be especially dangerous for young children and there's no way to tell in advance if their child will get a severe or mild case. Without vaccines, their child is at risk for getting seriously ill and suffering pain, disability, and even death from diseases like measles and whooping cough.

"I know you didn't get all these vaccines when you were a baby. Neither did I. However, we were both at risk of serious diseases like Hib and pneumococcal meningitis that can lead to deafness or brain damage. Today, we're able to protect your baby from 14 serious diseases before his second birthday with vaccines."

Questions about known side effects

It is reasonable for parents to be concerned about possible reactions or side effects listed on *Vaccine Information Statements*. Vaccines, like any medication, can cause some side effects. Many of these effects are minor, treatable, and last only a few days.

Parents may ask: ***Will my child be okay if she has a side effect? I know someone whose baby had a serious reaction—will my baby too?*** To respond, you can:

- Remind parents that most side effects are mild and go away within a few days.
- Reassure parents that you and your staff are prepared to deal with serious vaccine reactions.
- Encourage parents to watch for possible side effects (fussiness, low-grade fever, soreness where the shot was given) and provide information on how they should treat them and how to contact you if they observe something they are concerned about.
- Share your own experience, or lack thereof, of seeing a serious side effect from a vaccine. Explain that serious side effects are very rare.

Reassure parents that the disease-prevention benefits of getting vaccines are much greater than the risks of possible side effects.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

"I'll worry if your child doesn't get vaccines today, because the diseases can be very dangerous—most, including Hib, whooping cough, and measles, are still infecting children in the U.S. We can look at the Vaccine Information Statements together and talk about how rare serious vaccine side effects are."

Questions about unknown serious long-term side effects

Parents who look for information about vaccine safety will likely encounter information that says vaccines can lead to serious long-term side effects. It is understandable that parents may find this alarming.

Parents may ask: ***Do vaccines cause long-term side effects? Will getting a vaccine permanently hurt my child's health?***

To respond, you can share that:

- Vaccines are not linked to increases in health problems such as autism, asthma, or auto-immune diseases.
- There is no evidence to suggest that vaccines threaten a long, healthy life. Conversely, we know lack of vaccination threatens a long and healthy life.

"We have years of experience with vaccines and no reason to believe that vaccines cause long-term harm. I understand your concern, but I truly believe that the risk of diseases is greater than any risks posed by vaccines. Vaccines will get your baby off to a great start for a long, healthy life."

Questions about vaccine ingredients

Parents may ask about the ingredients contained in vaccines. Let them know that vaccines contain very small amounts of the ingredients listed below and that all ingredients play necessary roles either in making the vaccine or in ensuring that the final product is safe and effective.

Parents may ask: ***Are the ingredients in vaccines safe? Aren't aluminum and mercury dangerous?***

- Preservatives prevent contamination of the vaccine. Thimerosal, a compound containing mercury, is a preservative only found in multi-dose vials of flu vaccine.
- Adjuvants or enhancers, such as aluminum salts, are used to help the body develop immunity and a better immune response.
- Stabilizers, such as sugars and gelatin, are used to keep the vaccine potent during transportation and storage.
- Residual cell culture materials, such as egg protein, are used to grow enough of the virus or bacteria to make the vaccine.
- Residual inactivating ingredients, such as formaldehyde, are used during the production process to kill viruses or inactivate toxins during the manufacturing process.
- Residual antibiotics, such as neomycin, are used during the vaccine manufacturing process to prevent contamination by bacteria.

"Each vaccine ingredient plays an important role in either making the vaccine or ensuring that it is safe and effective so it will protect your child."

Questions about whether vaccines cause autism

Although many parents are aware that numerous studies show vaccines have nothing to do with autism, some parents have lingering questions and concerns.

Parents may ask: ***I've heard some parents say their child's behavior changed after vaccines; how do you know vaccines don't cause autism?*** Many rigorous studies show that there is no link between MMR vaccine or thimerosal and autism. If parents raise other possible hypotheses linking vaccines to autism, three items are key:

- Give patient and empathetic reassurance that you understand their infant's health is their top priority, and it also is your top priority, so putting children at risk of vaccine-preventable diseases without scientific evidence of a link between vaccines and autism is a risk you are not willing to take.
- Share that the onset of autism symptoms often coincides with the timing of vaccines but have nothing to do with vaccines.
- Give your personal and professional opinion that vaccines are very safe.

"Autism is a challenge for many families and people want answers—including me. But well designed and conducted studies that I can share with you show that MMR vaccine have nothing to do with autism."

Resources for questions about vaccines and autism:

- *Understanding Thimerosal, Mercury, and Vaccine Safety*
- *Understanding MMR Vaccine Safety*

Additional questions parents may ask

- ***Isn't natural immunity better than the kind from vaccines?***
- ***Do I have to vaccinate my baby on schedule if I'm breastfeeding him?***
- ***Why are so many doses needed for each vaccine?***

If you have additional questions from parents, reference *Infant Immunization FAQs* for regularly updated answers to common questions.

For information on vaccines, vaccine safety, and vaccine preventable diseases, visit: www.cdc.gov/vaccines/conversations

Provider Resources for Vaccine Conversations with Parents

These materials can help assist you in communicating with parents to best meet their needs and concerns about vaccines.

Talking with Parents about Vaccines

Many parents have questions about their child's vaccines. Providing appropriate responses to their questions can help parents feel confident in choosing to vaccinate their child according to the recommended immunization schedule. Materials to assist you in conversations with parents include:

- Talking with Parents about Vaccines for Infants
  (https://www.cdc.gov/vaccines/hcp/conversations/talking-with-parents.html)
  Learn conversational techniques and find resources for discussing vaccines with parents.

- Preparing for Questions Parents May Ask About Vaccines
  (https://www.cdc.gov/vaccines/hcp/conversations/preparing-for-parent-vaccine-questions.html)
  Prepare for common parent questions and learn techniques for your immunization conversations.

- HPV Vaccine Information for Clinicians
  (https://www.cdc.gov/hpv/hcp/index.html)
  Find information on HPV vaccine recommendations, tips for talking to parents, and strategies for improving vaccination rates in your practice.

- Video on Vaccine Communication with Parents: Best Practices
  (https://www.medscape.com/viewarticle/882865?src=par_cdc_stm_mscpedt&faf=1)
  A video explaining 5 research-based strategies to improve vaccine conversations with parents.

- Answering Parents' Questions about HPV Vaccine
  (https://www.cdc.gov/hpv/hcp/answering-questions.html)
  Most parents will accept HPV vaccination when you effectively recommend the vaccine and address their questions. Information on answering questions and making an effective recommendation.

- Video Series to Get Advice from Your Peers on How to Address Parents' Questions on HPV
  (https://www.cdc.gov/hpv/hcp/how-I-recommend.html)
  The #HowIRecommend video series highlights clinicians explaining how they are achieving high vaccination rates and effectively addressing parents' most common vaccination questions.

- 10 Ways to Create a Culture of Immunization Within Our Pediatric Practice
  (https://www.cdc.gov/vaccines/partners/childhood/professionals.html#presentation-10-ways)
  All staff in pediatric practices, including non-clinical staff, play an important role in supporting parents in their vaccine decisions. This slide deck presents concrete ways your practice can create a culture of immunization during all steps of a well child visit, from check-in to check-out. It is intended for use by physicians or vaccine coordinators during staff meetings or lunch-and-learn presentations.

08/05/2019

Sharing Information with Parents

Share these materials with parents to help them understand their child's vaccines. The materials can supplement your conversations with them.

- If You Choose Not to Vaccinate Your Child, Understand the Risks and Responsibilities (https://www.cdc.gov/vaccines/hcp/conversations/downloads/not-vacc-risks-color-office.pdf)
  This information outlines possible risks for parents who choose to delay or decline a vaccine; offers steps for parents to take to protect their child, family and others. Share with parents, or use it to train staff on key messages for parents who delay or refuse vaccines.

- Vaccine-preventable Disease Fact Sheets (https://www.cdc.gov/vaccines/hcp/conversations/prevent-diseases/index.html)
  These sheets provide facts and information about the diseases that childhood and preteen vaccines help prevent.

- Parent-friendly Immunization Schedules and Related Information (https://www.cdc.gov/vaccines/schedules/easy-to-read/child-easyread.html)
  Information for parents on which vaccines their child needs and when they should receive them.

- Vaccine Information for Parents (https://www.cdc.gov/vaccines/parents/index.html)
  General information for parents about vaccines for children.

- HPV Vaccine Information for Parents (https://www.cdc.gov/hpv/parents/index.html)
  Information for parents related to HPV vaccine, cancer prevention and vaccine safety.

- Videos to Answer Most Common Questions about the HPV Vaccine (https://www.cdc.gov/hpv/parents/can-i-ask-you-a-question/index.html)
  The "Can I ask you a question?" video series features pediatricians answering some of parents' most common questions about the HPV vaccine.

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CE Instructions for
WD4272R: How Nurses and Medical Assistants Can Foster a Culture of Immunization in the Practice
(Credit expires 12/4/2023)

To receive continuing education (CE)

In order to receive continuing education (CE) for WD4272R *How Nurses and Medical Assistants Can Foster a Culture of Immunization in the Practice*, please visit TCEO at www.cdc.gov/getCE and follow the 9 Simple Steps by 12/4/2023. Pass the posttest at 80%.

If you have any questions or problems, contact CDC/ATSDR Training and Continuing Education Online via email at ce@cdc.gov. You may also contact the CE Coordinator at NCIRD, Melissa Barnett at MBarnett2@cdc.gov

PROGRAM DESCRIPTION: Research shows that healthcare professionals are the most trusted source of information for parents when it comes to vaccines for their child. Nurses and medical assistants have a key role to play in improving vaccine acceptance and fostering a culture of immunization in the practice as they are in contact with parents throughout the office visit. This CE activity features practical strategies to improve vaccination rates in the practice, including how to deliver clear and concise vaccine recommendations and address parents' frequently asked questions. By highlighting key points before, during, and after a patient's visit to support vaccine conversations, this presentation will reinforce best practices for improving vaccination rates. Find out how to develop a culture of immunization in your practice.

OBJECTIVES: At the conclusion of the session, the participant will be able to:
Describe strategies nurses, medical assistants, pharmacists, and other healthcare professionals can utilize to foster a culture of immunization where all members of the practice work together to successfully communicate with parents and patients about childhood and adolescent vaccinations.
Describe the burden of vaccine-preventable diseases and the benefits of vaccination, including the role of vaccination in keeping children healthy.
Describe how to deliver clear and concise vaccine recommendations for boys and girls ages 0-18, including flu vaccine during flu season.
Describe strategies to improve competence of healthcare professionals around addressing parental concerns regarding childhood and adolescent vaccinations, including how to handle conversations during outbreaks.
Increase awareness of resources to facilitate vaccine conversations with parents.

FACULTY/CREDENTIALS:
Virginia Chambers, CMA, Department Faculty Chair and Program Director, Medical Assisting Program at Portland Community College
Andrea Polkinghorn, RN Enterprise Immunization Strategy Leader, Sanford Health

ORIGINATION DATE: 12/4/2019 **RENEWAL DATE:** 12/4/2021 **EXPIRATION DATE:** 12/4/2023

URL: https://www.cdc.gov/vaccines/ed/hpv/index.html
HARDWARE/SOFTWARE: Computer Hardware; Internet connection; Browser; **MATERIALS:** None

TARGET AUDIENCE: Administrators, CHES certified health educators, Physicians, Epidemiologists, LPNs, LVNs, Medical assistants, medical students, NPs, nurse technicians, other health educators, Pharmacists, PAs, program managers RNs

PREREQUISITES: Participants should have a basic educational background in science including general knowledge in the subject areas of biology, immunization and vaccine-preventable diseases.

FORMAT: This course is Enduring material.

ACCREDITATION STATEMENTS:

In support of improving patient care, The Centers for Disease Control and Prevention is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

CME: The Centers for Disease Control and Prevention designates this Enduring activity for a maximum of 0.75 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

CNE: The Centers for Disease Control and Prevention designates this activity for 0.5 nursing contact hours.

CEU: The Centers for Disease Control and Prevention is authorized by IACET to offer 0.1 CEU's for this program.

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For Certified Public Health Professionals (CPH)
The Centers for Disease Control and Prevention is a pre-approved provider of Certified in Public Health (CPH) recertification credits and is authorized to offer 0.75 CPH recertification credits for this program.

DISCLOSURE: In compliance with continuing education requirements, all presenters must disclose any financial or other associations with the manufacturers of commercial products, suppliers of commercial services, or commercial supporters as well as any use of unlabeled product(s) or product(s) under investigational use.

CDC, our planners, content experts, and their spouses/partners wish to disclose they have no financial interests or other relationships with the manufacturers of commercial products, suppliers of commercial services, or commercial supporters. Planners have reviewed content to ensure there is no bias.

Content will not include any discussion of the unlabeled use of a product or a product under investigational use.

CDC did not accept commercial support for this continuing education activity.

FEES: No fees are charged for CDC's CE activities.

Reviewed April 2018

Talking with Parents about Vaccines for Infants

Doctors, nurses, physician assistants, and office staff all play a key role in establishing and maintaining a practice-wide commitment to communicating effectively about vaccines and maintaining high vaccination rates. You can all answer parents' questions, provide educational materials, and ensure that families make and keep vaccine appointments.

Parents consider their child's health care professionals to be their most trusted source of information when it comes to vaccines. This is true even for parents who are vaccine-hesitant or who have considered delaying one or more vaccines. Therefore, you have a critical role in helping parents choose vaccines for their child.

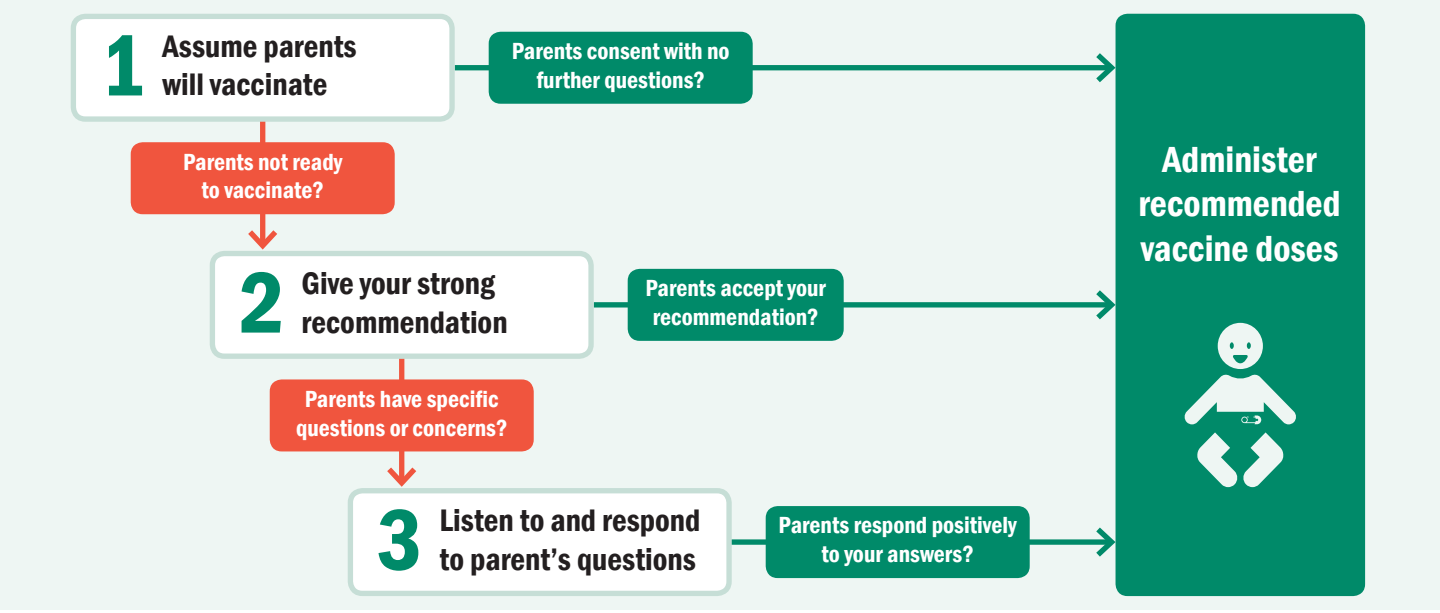
With all you do, you may feel that long vaccine conversations are stressful when you also need to check physical and cognitive milestones and have a full schedule of patients. Because of this, we designed this resource to guide you with conversational techniques and resources for discussing vaccines with parents.

Assume parents will vaccinate

State which vaccines the child needs to receive.
When discussing vaccines for children, it is best to remember most parents are planning to accept vaccines and to introduce the topic with that in mind. State the child will receive vaccines as though you presume that parents are ready to accept recommended vaccines for their child during that visit. For example:

> Instead of saying *"What do you want to do about shots?,"* say *"Your child needs three shots today."*
>
> Instead of saying *"Have you thought about the shots your child needs today?,"* say *"Your child needs DTaP, Hib, and Hepatits B shots today."*

A research study looking at health care professionals' (HCPs) and parents' interactions during vaccine visits showed that parents were more likely to express concerns when providers used language that asked parents about their vaccination plans. In this study, the presumptive approach resulted in significantly more parents accepting vaccines for their child, especially at first-time visits[1]. However, if parents still hesitate or express concerns, move to the next step and give your strong recommendation.



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Give your strong recommendation

If parents express concerns, then share your strong vaccine recommendation.

Although parents frequently consult family members, friends, and webpages for information on vaccines, parents consistently rank their child's doctor as their most trusted source for vaccine information. With this unique position, your strong recommendation is critical for vaccine acceptance.

Clearly state your strong recommendation. If appropriate, you can add a brief supporting statement that uses a mix of science and anecdote, depending on what you think will be most effective with that parent. Share the importance of vaccines to protect children from potentially life threatening diseases, or talk about your personal experiences with vaccination. For example:

> *"I strongly recommend your child get these vaccines today..."*
> *"...These shots are very important to protect him from serious diseases."*
> *"...I believe in vaccines so strongly that I vaccinated my own children on schedule."*
> *"...This office has given thousands of doses of vaccines and we have never seen a serious reaction."*

Listen to and respond to parents' questions

Seek to understand parents' concerns and provide requested information.

Although research shows most parents in the U.S. *support vaccines*, you will encounter parents with questions. If a parent has concerns, resists following the recommended vaccine schedule, or questions your strong recommendation, this doesn't necessarily mean they won't accept vaccines. Sometimes parents simply want *your* answers to their questions. Your willingness to listen to their concerns will play a major role in building trust in you and your recommendation.

When listening, seek to understand the concerns behind parents' questions before responding with information the parent may not be asking about. If you encounter questions you do not know the answer to, or information from sources you are unfamiliar with, it is best to acknowledge the parent's concerns and share what you *do know*. Offer to review the information they have found and, if necessary, schedule another appointment to discuss it further.

What if parents refuse to vaccinate?

If parents decline immunizations after your strong recommendation and conversation, use the following strategies:

- Continue the conversation about vaccines during the next visit and restate your strong recommendation.
- Inform parents about clinical presentations of vaccine-preventable diseases, including early symptoms.
- Remind parents to call before bringing their child into the office, clinic, or emergency department when the child is ill so health care professionals can take precautions to protect others. Explain that when scheduling an office visit for an ill child who has not received vaccines, you will need take all possible precautions to prevent contact with other patients, especially those too young to be fully vaccinated and those who have weakened immune systems.
- Share *If You Choose Not to Vaccinate Your Child, Understand the Risks and Responsibilities* with parents. This fact sheet explains the risks involved with their decision, including risks to other members of their community, and additional precautionary responsibilities for parents.
- You may wish to have parents sign AAP's *Refusal to Vaccinate* form each time a vaccine is refused so that you have a record of their refusal in their child's medical file.

Wrapping up the conversation

Remember that success comes in many forms. It may mean that parents accept all vaccines when you recommend them, or that they schedule some vaccines for another day. For very vaccine-hesitant parents, success may simply mean agreeing to leave the door open for future conversations.

Work with parents to agree on at least one action, such as:

- Scheduling another appointment or
- Encouraging the parent to read additional information you provide them.

If a parent declines vaccines once, it does not guarantee they always will. Continue to remind parents about the importance of keeping their child up to date on vaccines during future visits and work with them to get their child caught up if they fall behind.

Find resources for specific parent questions:
Preparing For Vaccine Questions Parents May Ask

For information on vaccines, vaccine safety, and vaccine preventable diseases:
www.cdc.gov/vaccines/conversations

[1] Opel, D. J., MD, MPH. (2015). The Influence of Provider Communication Behaviors on Parental Vaccine Acceptance and Visit Experience. *The American Journal of Public Health*, 105(10), 1998-2004.

Information for Health Care Professionals about Adolescent Vaccines

The Centers for Disease Control and Prevention (CDC) recommends four vaccines for adolescents to prevent:

- Tetanus, Diphtheria, Pertussis — ***Note: Recommendations for catch-up dose and minimum interval***
- Meningococcal disease — ***Note: A booster shot for teens***
- Human papillomavirus — ***Note: Added indications for Gardasil; recommendation for boys***
- Influenza — ***Note: Universal recommendation for everyone 6 months and older***

These recommendations are supported by the American Academy of Pediatrics, the American Academy of Family Physicians, and the Society for Adolescent Health and Medicine.

What can YOU do to ensure your patients get fully vaccinated?

- *Strongly* recommend adolescent vaccines to parents of your 11 through 18 year old patients. **Parents trust *your* opinion more than anyone else's when it comes to immunizations.** Studies consistently show that provider recommendation is the *strongest* predictor of vaccination.
- Use every opportunity to vaccinate your adolescent patients. **Ask about vaccination status when they come in for sick visits and sports physicals.**
- Patient reminder and recall systems such as automated **postcards, phone calls and text messages are effective tools for increasing office visits.**
- **Educate parents about the diseases that can be prevented by adolescent vaccines.** Parents may know very little about pertussis, meningococcal disease, or HPV.
- **Implement standing orders policies** so that patients can receive vaccines without a physician examination or individual physician order.

Direct parents who want more information on vaccines and vaccine-preventable diseases to visit the CDC website at http://www.cdc.gov/vaccines/teens or to call 800-CDC-INFO.

Note about syncope: *For **all** vaccines given during adolescence, syncope has been reported in both boys and girls. To avoid serious injury related to a syncopal episode, adolescents should always be sitting or lying down to receive vaccines, remain so for 15 minutes, AND be observed during this time.*

Overview of Adolescent Vaccination Recommendations

- All 11 or 12 year olds should receive a single dose of Tdap vaccine if they have completed the recommended childhood DTP/DTaP vaccination series and have not received Tdap
- All 11 or 12 year olds should receive a single dose of meningococcal vaccine, with a booster dose at age 16 years
- All girls 11 or 12 years old should get 3 doses of either HPV vaccine to protect against cervical cancer; All boys 11 or 12 years old should get 3 doses of quadrivalent HPV vaccine to protect against genital warts and anal cancer
- All adolescents should receive a single dose of influenza vaccine every year

Age ▸ / ▾ Vaccine	7–10 YEARS	11-12 YEARS	13-18 YEARS
Tdap	Childhood Catch-up	Recommended	Catch-Up
HPV		Recommended	Catch-Up
MCV4	High-Risk	Recommended	Recommended
Flu	Recommended		

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Tdap (tetanus toxoid - reduced diphtheria toxoid - acellular pertussis) Vaccine

Because immunity from childhood DTaP vaccines wanes by adolescence, a booster dose is recommended. **Of the nearly 17,000 cases of pertussis reported in the United States in 2009, 4265 occurred among 10- through 19-year-olds.** Increasing immunization rates among adolescents is an important strategy for reducing disease among both adolescents and infants too young to be fully immunized. According to the 2010 National Immunization Survey-Teen (NIS-Teen), about 69% of 13- through 17-year-olds received Tdap.

Recommendations:

- **All 11- through 18-year-olds should receive a single dose of Tdap vaccine (preferably at age 11 or 12 years) if they have completed the recommended childhood DTP/DTaP vaccination series and have not received Tdap.**
- Children aged 7 through 10 years and adolescents aged 11 through 18 years who did not complete the childhood DTaP series or with unknown vaccine history should be given one dose of Tdap as part of the catch-up regimen. Td should be used for any other doses needed.
- Tdap should be administered regardless of interval since the last tetanus or diphtheria toxoid-containing vaccine. While longer intervals between Td and Tdap vaccination could decrease the occurrence of local reactions, the benefits of protection against pertussis outweigh the potential risk for adverse events.
- Tdap vaccine can be administered at the same time as other adolescent vaccines.

Vaccines licensed in the United States:

- Boostrix® (GlaxoSmithKline) is indicated for active booster immunization for the prevention of tetanus, diphtheria and pertussis as a single dose in persons 10 through 64 years of age.
- Adacel® (sanofi pasteur) is indicated for active booster immunization for the prevention of tetanus, diphtheria and pertussis as a single dose in persons 11 through 64 years of age.

Possible side effects:

Pain, redness, swelling at the injection site; mild fever; headache; fatigue; nausea, vomiting, diarrhea, or stomach ache.

Contraindications and precautions:

- Tdap is contraindicated for persons with a history of serious allergic reaction (e.g., anaphylaxis) to any component of the vaccine.
- Tdap is contraindicated for adolescents with a history of encephalopathy (e.g., coma or prolonged seizures) not attributable to an identifiable cause within 7 days of administration of a vaccine with pertussis components. This contraindication is for the pertussis components and these adolescents should receive Td instead of Tdap.

Meningococcal Conjugate Vaccine (MCV4)

Although rates of meningococcal disease are the lowest they have ever been in the United States, about 1000 cases are reported each year in this country. Each case is alarming and potentially deadly. **The incidence of meningococcal disease increases in adolescence and early adulthood.** About 10-15% of adolescents who contract the disease will die, and about 20% will suffer from a long-term disability. According to the 2010 National Immunization Survey-Teen (NIS-Teen), about 63% of 13- through 17-year-olds received MCV4.

Recommendations:

- **All 11- or 12-year-olds should receive a single dose of meningococcal vaccine, with a booster dose at age 16 years.**
- For adolescents who receive the first dose at age 13 through 15 years, a one-time booster dose should be administered, preferably at age 16 through 18 years. Persons who receive their f0irst dose of meningococcal conjugate vaccine at or after age 16 years do not need a booster dose.
- Adolescents with persistent complement component deficiencies (e.g., C5-C9, properidin, factor H, or factor D) and asplenia should receive a 2-dose primary series administered 2 months apart and then receive a booster dose every 5 years.
- Adolescents aged 11–18 years with HIV infection should be routinely vaccinated with a 2-dose primary series.
- Vaccination is also recommended for unvaccinated college freshmen who live in dormitories, and also for unvaccinated military recruits. Older adolescents, including college students, who wish to decrease their risk for meningococcal disease, may elect to receive meningococcal vaccine.
- Meningococcal vaccine can be administered at the same time as other adolescent vaccines.

Vaccines licensed in the United States:

- Menactra® (sanofi pasteur) is indicated for active immunization of persons 9 months through 55 years of age for the prevention of invasive meningococcal disease caused by *N. meningitidis* serogroups A, C, Y and W-135.
- Menveo® (Novartis) is indicated for active immunization of persons 2 through 55 years of age to prevent invasive meningococcal disease caused by *N. meningitidis* serogroups A, C, Y, and W-135.

Possible side effects:

The most commonly reported side effects are redness or pain at the injection site. A small percentage of recipients reported fever.

Contraindications and precautions:

- Meningococcal vaccine is contraindicated among persons known to have a severe allergic reaction to any component of the vaccine, including diphtheria toxoid, or to dry natural rubber latex.

Human Papillomavirus (HPV) Vaccine

Cervical cancer, caused by HPV, is one of the most common cancers in women—every year in the United States, about 12,000 women are diagnosed with cervical cancer, and about 4,000 women die from this disease. HPV types 16 and 18 are the most common high-risk types associated with cervical cancer, while HPV 6 and 11 are the most common low-risk types associated with genital and respiratory tract warts (recurrent respiratory papillomatosis or RRP). High-risk HPV types have also been associated with other, less common cancers and precancers in women, such as vulvar, vaginal, anal, opharyngeal carcinomas and dysplasia. HPV-associated cancers in males include certain anal, penile, and oropharyngeal carcinomas and dysplasia.

According to the 2010 NIS-Teen, about 49% of 13- through 17-year-old girls have started an HPV vaccine series. However, only about 32% received all 3 doses. **Completing the 3-dose HPV vaccine series is very important to ensure protection against cervical cancer and other HPV-related disease.**

Vaccines licensed in the United States:

- Cervarix® is indicated for the prevention of cervical cancer and precancers caused by HPV types 16 and 18.
- Gardasil® is indicated for the prevention of cervical, vulvar, vaginal and anal cancers and precancers, as well as genital warts, caused by HPV types 6, 11, 16 and 18.

Recommendations:

- **All 11 or 12 year olds should receive 3 doses of HPV vaccine to protect against HPV-related disease.**
- **All girls 11 or 12 years old should get 3 doses of HPV vaccine to protect against cervical cancer.** Girls and young women ages 13 through 26 should get all 3 doses of an HPV vaccine if they have not yet received all doses. Both brands of vaccine are highly effective for preventing cervical cancer and precancer caused by HPV types 16 and 18. Gardasil also protects against anal cancer and genital warts.
- **All boys 11 or 12 years old should get 3 doses of quadrivalent HPV vaccine (Gardasil) to protect against genital warts and anal cancer.** Boys and young men 13 through 21 years, who did not get any or all of the three recommended doses when they were younger, should also get the HPV vaccine series. MSM and immunocompromised males should receive the vaccine through age 26 years, if they did not start or complete the vaccine series when they were younger.
- HPV vaccines are administered in a 3-dose schedule. The second dose should be administered 1 to 2 months after the first dose, and the third dose should be administered 6 months after the first dose. There is no maximum interval between doses. If the HPV vaccine schedule is interrupted, the vaccine series does not need to be restarted.
- Whenever feasible, the same brand of HPV vaccine should be used for the entire vaccination series. However, if the vaccine provider does not know which brand of vaccine was previously administered or have it available, either brand of HPV vaccine can be used to complete the series.
- Individuals will get the greatest benefit from the vaccine if it is administered before they have initiated *any* type of sexual activity with another person.
- Studies demonstrate that the risk for HPV infection is high immediately following sexual debut. It is also important to note that 1 in 5 women who have only had one lifetime sex partner have been infected with a high-risk HPV type.
- Vaccination is recommended for patients with HPV-related disease and/or apparent HPV infection because the vaccine can offer protection against infection with HPV vaccine types not already acquired. However, vaccination will not have a therapeutic effect on existing HPV infection or HPV-related disease.
- HPV vaccine can be administered at the same time as other adolescent vaccines.

Possible side effects:

Pain, headache, redness or swelling at the injection site are the most commonly reported side effects.

Contraindications and precautions:

- HPV vaccines are not recommended for use in pregnancy. If a patient is found to be pregnant after initiating the vaccination series, the remainder of the 3-dose series should be delayed until completion of pregnancy. However, if a vaccine dose has been administered during pregnancy, no intervention is needed. Clinicians should report exposure to Gardasil during pregnancy to Merck at 800-986-8999, and exposure to Cervarix during pregnancy to GlaxoSmithKline at 888-452-9622.
- HPV vaccines are contraindicated for persons with a history of immediate hypersensitivity to any vaccine component. Gardasil is contraindicated for persons with a history of immediate hypersensitivity to yeast. Prefilled syringes of Cervarix have latex in the rubber stopper and should not be used in persons with anaphylactic latex allergy. Cervarix single-dose vials contain no latex.

Influenza Vaccine

CDC recommends universal annual flu vaccination for everyone aged 6 months and older. Flu can be serious, and even fatal, for healthy adolescents, but pre-teens and teens with certain medical conditions are more likely to suffer from serious flu complications. Conditions that place people at high risk include chronic lung disease (such as asthma); heart disease; endocrine disorders (such as diabetes); blood disorders; neurological and neurodevelopmental conditions; kidney, liver, and metabolic disorders; and weakened immune systems due to disease or medication. Flu seasons are unpredictable and can be severe. Each year in the United States, more than 200,000 people are hospitalized from flu-related complications.

Annual influenza vaccination is the most effective method for preventing influenza virus infection and its complications since flu viruses are constantly changing. Protective immunity generally develops in 2 weeks after being vaccinated.

Vaccines Licensed in the United States:

- Trivalent Inactivated Influenza Vaccine (TIV) is given as an injection. It can be used for people 6 months of age or older, including healthy people, those with chronic medical conditions, and pregnant women. Brands licensed in the United States include Fluarix®, Fluvirin®, Fluzone®, FluLaval®, and Afluria®.
- Live, Intranasal Influenza Vaccine (LAIV) is given as a nasal spray. It can be used for healthy people 2 through 49 years of age who are not pregnant. FluMist® is the only brand licensed in the United States.

Recommendations:

- **Adolescents should receive a single dose of influenza vaccine *every year*.**
- Influenza vaccine can be administered at the same time as other adolescent vaccines.

Possible side effects:

TIV (injection): Soreness, redness, or swelling at the injection site; hoarseness; sore, red or itchy eyes, cough; fever, aches. If these problems occur, they begin soon after the shot and usually last 1 to 2 days. TIV contains noninfectious killed viruses and cannot cause influenza.

LAIV (nasal spray): Runny nose, nasal congestion, or cough; fever; headache and muscle aches; wheezing; abdominal pain or occasional vomiting or diarrhea. LAIV contains weakened influenza viruses that cannot replicate outside the nasal passages and cannot cause influenza.

Contraindications and precautions:

- Influenza vaccines should not be administered to people who have anaphylactic hypersensitivity to eggs, unless the recipient has been desensitized.
- Moderate or severe acute illness with or without fever is a precaution for vaccination. People who are moderately or severely ill should not be vaccinated until they recover.
- GBS within 6 weeks following a previous dose of influenza vaccine is a precaution for use of influenza vaccines.
- LAIV (nasal spray) should not be administered to pregnant adolescents, adolescents with chronic medical conditions (including asthma, metabolic disease, or hemoglobinopathy) as well as adolescents receiving aspirin or other salicylates.

Catch-Up Vaccines for Adolescents

Pre-teens and teens should receive doses of these vaccines as indicated to complete each series:

- Hepatitis B vaccine (HepB): Complete the 3-dose series if not previously completed. Note: A 2-dose series (separated by at least 4 months) of Recombivax HB® is licensed for children aged 11 through 15 years.
- Varicella vaccine: Complete the 2-dose series if not previously completed, with at least 3 months between doses for persons aged 12 months through 12 years. (If the second dose was administered at least 28 days after the first dose, it can be accepted as valid.) For persons aged 13 years and older, the minimum interval between doses is 28 days.
- Inactivated poliovirus vaccine (IPV): The childhood series is 4 doses. However, only 3 doses are needed for pre-teens and teens who received their third dose after 4 years of age, as well as pre-teens and teens in your care who have not received any doses. In all cases, a minimum interval of 6 months is needed between the last two doses.
- Measles-mumps-rubella vaccine (MMR): Complete the 2-dose series if not previously completed, with at least 28 days between doses.

A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Refer to the CDC Catch-Up Immunization Schedule for more information.

Vaccine Information Statements

Vaccine Information Statements (VIS) are an excellent source of information for patients about the risks, benefits, and side effects of vaccines. **Federal law requires that VIS be given out *before* vaccines are administered.** To download any VIS, visit http://www.cdc.gov/vaccines/pubs/vis/default.htm

Vaccine Adverse Events Reporting System

Doctors and other health care professionals are encouraged to report any adverse events following administration of vaccines to the Vaccine Adverse Event Reporting System (VAERS), which is jointly administered by CDC and the U.S. Food and Drug Administration. Visit http://vaers.hhs.gov for more information or to file a report.

Vaccines for Children

The Vaccines for Children (VFC) program provides vaccines at no cost to professionals who serve eligible children. Children younger than 19 years of age are eligible for VFC vaccines if they are Medicaid-eligible, American Indian or Alaska Native or have no health insurance. Children who have health insurance that does not cover vaccination can receive VFC vaccines through Federally Qualified Health Centers or Rural Health Centers. VFC vaccines cannot be denied to an eligible child if a family can't afford the administration fee. For more information about participating in VFC, visit
http://www.cdc.gov/vaccines/programs/vfc/

Top 10 Ways to Improve Adolescent Immunization Rates

1 Immunize at every opportunity.

Adolescents do make office visits, but opportunities are often missed to provide age-appropriate vaccines that are due at that time. Consider every patient encounter a potential vaccination visit, starting with well visits and annual physicals. Immunization opportunities also arise during sports and camp physicals; acute care and follow-up visits; visits for care of chronic illness; and visits for COVID-19 or annual influenza immunization.

2 Use reminder and recall systems.

The Centers for Disease Control and Prevention (CDC) recommends these systems, which typically include computer-generated reminders to you and your staff that a patient is due for one or more vaccines. Messages can be delivered to patients and parents via telephone calls, letters, postcards, e-mail, or text messages, noting that vaccines are either due (reminder) or past due (recall).

3 Implement standing orders.

Standing orders authorize nurses, pharmacists, and other appropriately trained healthcare personnel, where allowed by state law, to assess a patient's immunization status and administer vaccinations according to a protocol approved by an institution, physician, or other authorized practitioner. Standing orders work by enabling assessment and vaccination of the patient without the need for clinician examination or direct order from the attending provider at the time of the interaction.

4 Take part in an immunization registry.

A population-based immunization registry provides ready access to a comprehensive immunization record for every patient, even one who has been vaccinated by a number of different providers. These Immunization Information Systems (IIS) may be state or local.

5 Review your patients' vaccination histories

Prior to visits, review your patient's immunization record (both your medical record and information available in the immunization registry) and flag the chart if your patient is due or overdue for vaccines. At all visits, review your patient's immunization status, regardless of the reason for the visit. Maintain a comprehensive immunization record in your patient's chart and update it regularly, as well as send the information to the immunization registry.

6 Follow the U.S. recommended immunization schedule.

CDC recommends that adolescents receive several vaccines starting at 11 or 12 years of age, including tetanus-diphtheria-acellular pertussis (Tdap), meningococcal ACWY (MenACWY), and the human papillomavirus (HPV) series. Depending on the age at the first dose, 2–3 doses of HPV are recommended over a 6-month period. The second dose of MenACWY is given at 16 years of age, along with a dose of meningococcal B vaccine when it is appropriate. Influenza vaccine is recommended annually. If your patient falls behind, vaccinate at the next opportunity or recall him or her for overdue vaccines.

CONTINUED ON NEXT PAGE ▶

For additional resources on how to improve adolescent immunization coverage for MenACWY and other recommended vaccines, see **www.give2menacwy.org**.

MenACWY YOU'RE NOT DONE IF YOU GIVE JUST ONE
GIVE 2 DOSES to Strengthen Protection

7 Schedule vaccination-only quick visits.

The National Vaccine Advisory Committee suggests vaccination-only visits, with staff members who are permitted under state law to assess the need for and provide vaccination services using standing orders. Offering such opportunities during regular office hours, or providing flexible hours in the evenings or on weekends, will help increase access to vaccines and help your practice run more efficiently.

8 Make vaccination education a priority, for parents as well as patients.

Many parents are not aware that adolescents need a number of vaccinations. Others may question whether their children will benefit from the recommended immunizations. In addition to sharing information from trustworthy sources, providers can make themselves or designated staff members available to address individual concerns about vaccines and provide counseling and reassurance as needed.

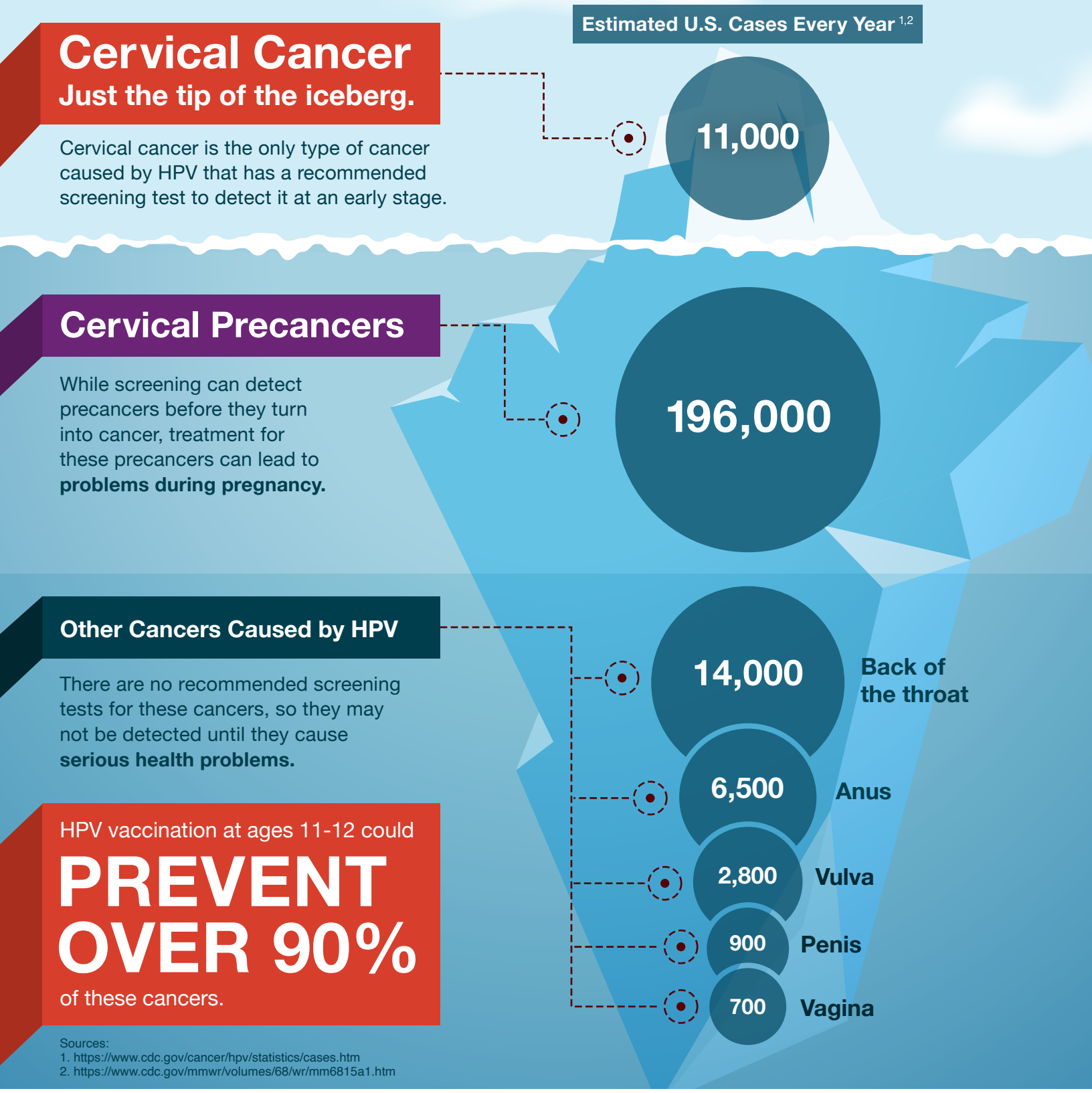
9 Establish rapport with your adolescent patients

A nonjudgmental approach, a readiness to listen and answer questions, and an assurance of confidentiality can help adolescents feel comfortable discussing a wide range of issues, including vaccinations. In many cases, vaccinations will be part of broader conversations about common clinical and psychosocial concerns of adolescents.

10 Create a culture that values well-adolescent care.

Young children are expected to have regular health assessments that include immunization. The next logical step is to create the same set of high expectations for well-adolescent care. Every member of your staff should emphasize the importance of adolescent vaccination and help assure that all doses of recommended vaccines for adolescents are administered. You also can reinforce this message by displaying posters or other appropriate educational materials in your waiting area or exam rooms.

HPV vaccination is the best protection against certain cancers caused by HPV.



Cervical Cancer
Just the tip of the iceberg.

Cervical cancer is the only type of cancer caused by HPV that has a recommended screening test to detect it at an early stage.

Cervical Precancers

While screening can detect precancers before they turn into cancer, treatment for these precancers can lead to **problems during pregnancy.**

Other Cancers Caused by HPV

There are no recommended screening tests for these cancers, so they may not be detected until they cause **serious health problems.**

HPV vaccination at ages 11-12 could

PREVENT OVER 90%

of these cancers.

Sources:
1. https://www.cdc.gov/cancer/hpv/statistics/cases.htm
2. https://www.cdc.gov/mmwr/volumes/68/wr/mm6815a1.htm

For additional information, visit:
www.cdc.gov/HPV

HPV VACCINE IS CANCER PREVENTION

Last updated AUGUST 2021
LC082421

Talking to Parents about HPV Vaccine

HPV VACCINE IS CANCER PREVENTION

Recommend HPV vaccination in the **same way** and on the **same day** as all adolescent vaccines. You can say, "Now that your son is 11, he is due for vaccinations today to help protect him from meningitis, HPV cancers, and whooping cough. Do you have any questions?" Taking the time to listen and understand parents' concerns can help you respond to their concerns more effectively.

Why does my child need HPV vaccine?

HPV vaccine is important because it prevents infections that can cause cancer. That's why we need to start the shot series today.

How do you know the vaccine works?

Studies continue to prove HPV vaccination works extremely well, decreasing the number of infections and HPV precancers in young people since it has been available.

Why do they need HPV vaccine at such a young age?

Vaccines protect your child before they are exposed to a disease. That's why we give the HPV vaccine earlier rather than later, to protect them long before they are ever exposed.

Also, if your child gets the shot now, they will only need two doses. If you wait until your child is older, they may end up needing three shots.

Why do boys need the HPV vaccine?

HPV vaccination can help prevent future infections that can lead to cancers of the penis, anus, and back of the throat in men.

Are all of these vaccines actually required?

I strongly recommend each of these vaccines and so do experts at the CDC and major medical organizations. School entry requirements are developed for public health and safety, but don't always reflect the most current medical recommendations for your child's health.

What diseases are caused by HPV?

Some HPV infections can cause cancer—like cancer of the cervix or in the back of the throat—but we can protect your child from these cancers in the future by getting the first HPV shot today.

Is my child really at risk for HPV?

HPV is a very common infection in women and men that can cause cancer. Starting the vaccine series today will help protect your child from the cancers and diseases caused by HPV.

I'm worried my child will think that getting this vaccine makes it OK to have sex.

Studies tell us that getting HPV vaccine doesn't make kids more likely to start having sex. I made sure my child (or grandchild, etc.) got HPV vaccine, and I recommend we give your child her first HPV shot today.

I'm worried about the safety of HPV vaccine. Do you think it's safe?

Yes, HPV vaccination is very safe. Like any medication, vaccines can cause side effects, including pain, swelling, or redness where the shot was given. That's normal for HPV vaccine too and should go away in a day or two. Sometimes kids faint after they get shots and they could be injured if they fall from fainting. We'll have your child stay seated after the shot to help protect him/her.

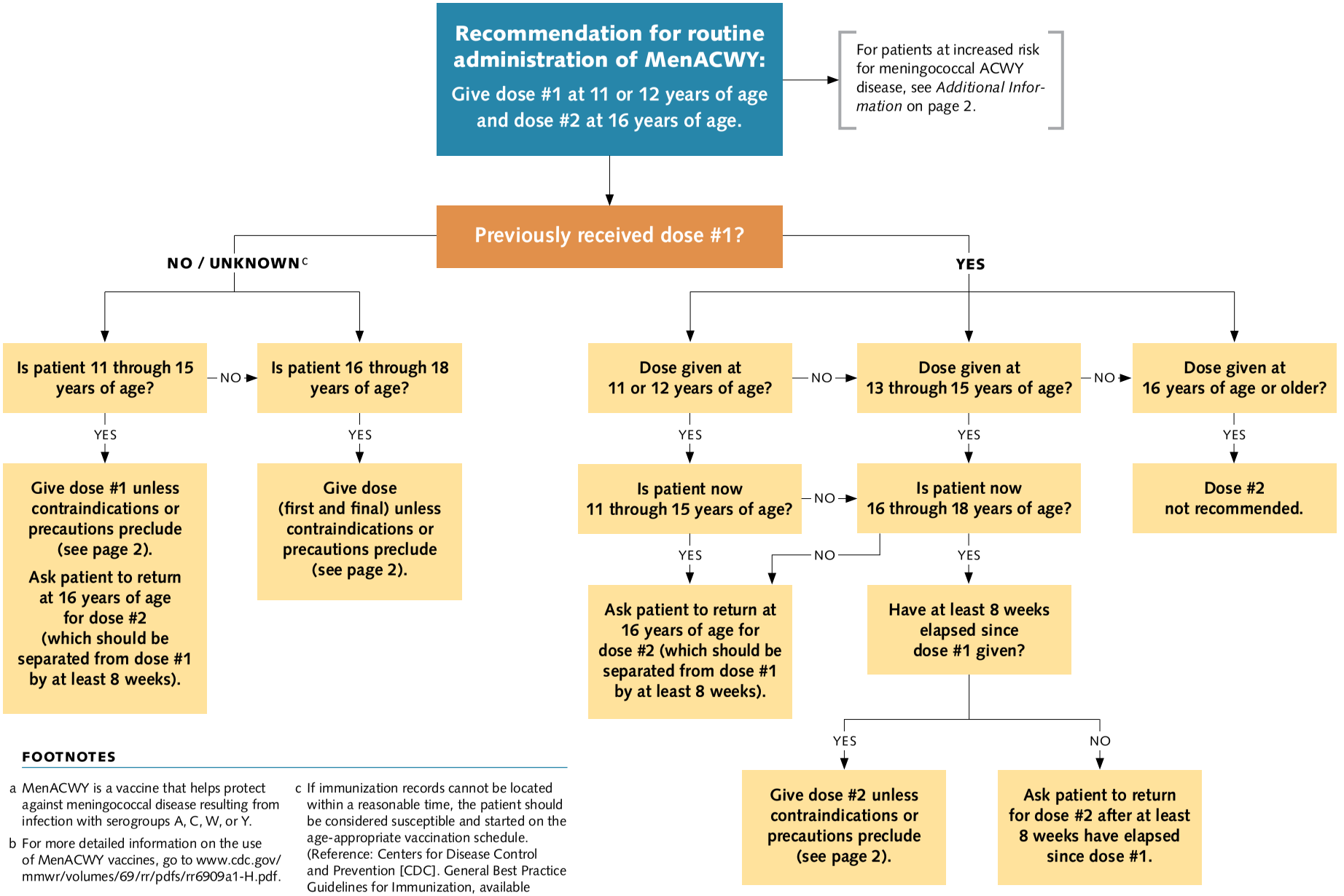
Can HPV vaccine cause infertility in my child?

There is no evidence available to suggest that getting HPV vaccine will have an effect on future fertility. However, women who develop an HPV precancer or cancer could require treatment that would limit their ability to have children.

For more information, visit
cdc.gov/vaccines/conversations

PN300195
CS269453B
Last updated JULY 2019

Algorithm for MenACWY[a] Immunization in Adolescents 11 through 18 Years of Age[b]



FOOTNOTES

a MenACWY is a vaccine that helps protect against meningococcal disease resulting from infection with serogroups A, C, W, or Y.

b For more detailed information on the use of MenACWY vaccines, go to www.cdc.gov/mmwr/volumes/69/rr/pdfs/rr6909a1-H.pdf.

c If immunization records cannot be located within a reasonable time, the patient should be considered susceptible and started on the age-appropriate vaccination schedule. (Reference: Centers for Disease Control and Prevention [CDC]. General Best Practice Guidelines for Immunization, available at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/timing.html)

Additional Information

Administration of MenACWY

- MenACWY may be given through 21 years of age as catch-up vaccination for those who have not received a dose after their 16th birthday.
- Routine MenACWY vaccination of healthy people not at increased risk for exposure to *Neisseria meningitidis* is not recommended for those older than 21 years of age.

Persons living with human immunodeficiency virus (HIV)

- MenACWY vaccination is recommended for all children 2 months of age or older with HIV infection.
- Adolescents age 11 through 18 with HIV infection being vaccinated for the first time should receive a 2-dose primary series, with at least 8 weeks between doses. They should receive a booster dose every five years throughout life. (See www.cdc.gov/mmwr/volumes/69/rr/pdfs/rr6909a1-H.pdf for details.)

Persons at increased risk for meningococcal disease for whom MenACWY immunization is recommended

- First year college students living in a residential hall who have not had a dose of MenACWY since turning 16 or who received a dose after turning 16 but the dose was given 5 years or more before enrollment.
- People with a persistent complement component deficiency caused by an immune system disorder or by taking a complement inhibitor (eculizumab {Soliris] or ravulizumab {Ultomiris])
- People with anatomic or functional asplenia
- Microbiologists routinely exposed to *Neisseria meningitidis* isolates
- Travelers to or residents of countries where meningococcal disease is hyperendemic or epidemic
- United States military recruits

For dosing recommendations, refer to the CDC guidelines (www.cdc.gov/mmwr/volumes/69/rr/pdfs/rr6909a1-H.pdf) or go to www.immunize.org/catg.d/p2018.pdf.

Contraindications and precautions

- **Contraindications:** history of a serious allergic reaction (e.g., anaphylaxis) after a previous dose of meningococcal vaccine or to a meningococcal vaccine component. For information on vaccine components, refer to the manufacturer's package insert (www.immunize.org/packageinserts) or go to www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf.
- **Precautions:** moderate or severe acute illness with or without fever. (Refer to manufacturer's package insert for additional precautions, e.g., potential for diminished immune response in persons with altered immunocompetence.)

MenACWY **YOU'RE NOT DONE** IF YOU GIVE JUST ONE
GIVE 2 DOSES to Strengthen Protection

For additional resources on how to improve adolescent immunization coverage for MenACWY and other recommended vaccines, see **www.give2menacwy.org**.

www.give2menacwy.org/adolescent-algorithm ▪ Item #P8013 (7/21)

Meningococcal B Vaccine:
IAC Answers Your Questions

For complete information on CDC's recommendations for the use of meningococcal vaccine, go to www.immunize.org/acip

Experts from the Immunization Action Coalition (IAC) answer your questions about meningococcal serogroup B (MenB) vaccine. You'll find additional Q&As about meningococcal B vaccine on the "Ask the Experts" section of immunize.org at www.immunize.org/askexperts/experts_meningococcal_b.asp

Which meningococcal vaccines are available in the United States?

There are 2 types of meningococcal vaccine available in the United States. One type of vaccine (MenACWY) contains the surface polysaccharides of meningococcal serogroups A, C, W and Y chemically bonded (conjugated) to a protein. This vaccine is recommended for all adolescents at 11–12 years and a second dose at 16 years. A second type are vaccines for meningococcal serogroup B (MenB), which are composed of proteins also found in the surface of the bacteria. No type of vaccine contains live or intact meningococcal bacteria.

MenACWY vaccines provide no protection against serogroup B disease and MenB vaccines provide no protection against serogroup A, C, W or Y disease. For protection against all 5 serogroups of meningococcus it is necessary to receive a MenACWY and a MenB vaccine.

Which individuals in risk groups are recommended to be vaccinated against meningococcal serogroup B disease?

CDC's Advisory Committee on Immunization Practices (ACIP) recommends routine MenB vaccination of the following individuals in certain risk groups:

- People age 10 years and older who have a damaged or missing spleen
- People age 10 years and older who have persistent complement component deficiency (an immune system disorder) or taking a complement inhibitor (Soliris [eculizumab] or Ultomiris [revulizumab])
- People age 10 years and older who are at risk during a serogroup B meningococcal outbreak
- Microbiologists who work with meningococcus bacteria in a laboratory

Which individuals are recommended to be vaccinated against meningococcal serogroup B disease who are not in risk groups?

ACIP recommends that a MenB vaccine series may be administered to people 16 through 23 years of age with a preferred age of vaccination of 16 through 18 years, subject to shared clinical decision-making (SCDM). SCDM gives clinicians an opportunity to discuss the value of MenB vaccination with their patients to make a decision together about the individual's need or desire for the vaccine based on risks, benefits, and wish for protection from the disease.

What information should healthy people age 16 through 23 years and their healthcare provider consider when deciding on the use of MenB vaccine?

Considerations for shared clinical decision-making for vaccination against meningococcal B disease include:

- MenB disease is serious, with high rates of death and disability.
- MenB disease is rare (about 34 cases per year in people age 16 through 23 years in the U.S.).
- Risk of MenB disease is higher among college students, especially those who are freshmen, attend a 4-year university, live on campus, or participate in fraternities or sororities.
- MenB vaccines protect against most serogroup B strains.
- MenB vaccines provide short-term protection, with protective antibody levels declining within 1–2 years.
- MenB vaccines may prevent illness but a vaccinated person may still carry the serogroup B bacteria in their nose.

Should college students be vaccinated against meningococcal B disease?

With widespread use of MenACWY vaccines, the risk for meningococcal disease among college students is greatest for serogroup B, although serogroup B disease in this group is still rare. College students ages 16 through 23 may choose to receive MenB vaccine to reduce their risk of MenB disease.

Should international travelers receive both meningococcal conjugate vaccine and meningococcal serogroup B vaccine?

Travelers are not considered to be a group at increased risk for serogroup B meningococcal disease and are not recommended to receive serogroup B vaccine. Meningococcal conjugate vaccine (MenACWY) continues to be recommended for certain international travelers.

What is the schedule for administering the primary series of MenB vaccine?

Bexsero is a 2-dose series with dose #2 given at least 1 month after dose #1. Trumenba is either a 2-dose series with doses administered at least 6 months apart or a 3-dose series with dose #2 administered at 0, 1–2 months, and 6 months. The ACIP recommends that persons at increased risk of meningococcal serogroup B disease (complement component deficiency, complement inhibitor use (taking Soliris [eculizumab] or Ultomiris [ravulizumab]), functional or anatomic asplenia, at risk during an outbreak of meningococcal B disease and microbiologists who handle meningococcal isolates) receive either the 2-dose Bexsero series or the 3-dose Trumenba series. Persons not at increased risk (such as healthy adolescents and young adults) can receive either the 2-dose Bexsero series or the 2-dose Trumenba series. If the second dose of Trumenba is administered earlier than 6 months after dose #1, a third dose should be administered at least 4 months after dose #2.

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immunization action coalition
IAC
immunize.org

Saint Paul, Minnesota · 651-647-9009 · www.immunize.org · www.vaccineinformation.org

www.immunize.org/catg.d/p2040.pdf · Item #P2040 (10/20)

Can the MenB series be completed with a different MenB brand from the one the series was begun with?

No. MenB vaccines are not interchangeable. All doses must be of the same brand. If a person who has received one or more doses of MenB vaccine in the past needs vaccination but the brand of previous doses is unknown or unavailable, restart the primary series with the available brand.

Can meningococcal conjugate (MenACWY) and MenB vaccines be given at the same visit?

Yes. MenACWY and MenB vaccines can be given at the same visit or at any time before or after the other.

Which groups of patients should receive a booster dose of MenB vaccine after completion of the series?

People age 10 years and older with a damaged or missing spleen, persistent complement component deficiency (an immune system disorder) or who use a complement inhibitor (Soliris [eculizumab] or Ultomiris [revulizumab]), and microbiologists who handle meningococcal isolates should receive booster doses after their primary series as long as they remain at increased risk. The first booster dose is recommended 1 year after completion of the primary series, followed by a booster dose every 2-3 years thereafter, as long as increased risk remains. Because MenB brands are not interchangeable, the booster doses must be of the same brand as the primary series. If the primary series brand is unknown or unavailable, restart the primary series with the available brand.

Previously vaccinated people who are determined by public health officials to be at risk due to a serogroup B outbreak should receive a booster dose if it has been 1 or more years since completion of their primary series. Depending upon the outbreak conditions, public health authorities may recommend a booster dose as little as 6 months after completion of the primary series. Do not delay vaccination during an outbreak if the primary series brand is unknown. However, if the primary series brand is unknown or is not the same as the outbreak dose, to ensure optimal protection, the recipient should return at least 4 weeks later to receive a booster dose of the primary series brand or to proceed with completing the primary series of the brand used in the outbreak response.

What are the contraindications and precautions to MenB vaccine?

The only contraindication is a severe allergic reaction (such as anaphylaxis) to a previous dose or to a vaccine component. Precautions include moderate to severe acute illness (defer until resolved) and pregnancy.

What adverse reactions have been reported after MenB vaccine?

For both MenB vaccines, the most common adverse reactions observed in clinical trials were local reactions, including pain at the injection site (83%–85%), redness, and swelling.

REFERENCE

Meningococcal Vaccination: Recommendations of the Advisory Committee on Immunization Practices. *MMWR*, 2020;69(No. RR-9):1-41. Available at www.cdc.gov/mmwr/volumes/69/rr/pdfs/rr6909a1-H.pdf.

Recommending MenACWY*: What to Say and How to Say It

The National Vaccine Advisory Committee (NVAC) calls on all healthcare providers to[1]

- Assess the immunization status of all patients during every clinical encounter.
- Strongly recommend all immunizations that patients need.
- Administer vaccines in your healthcare setting, or, if you can't, refer the patient to a provider who immunizes.
- Document the vaccination given.

A clinician's strong recommendation for a vaccine is known to be powerful and persuasive in building vaccine confidence and acceptance among patients and parents.

From October 2019–January 2020 in the United States, for example, a clinician's recommendation was a key factor in determining whether pregnant women were vaccinated against influenza. When the clinician made a recommendation and offered vaccination, 75.2% of pregnant women were vaccinated. If the clinician made a recommendation but did not offer vaccination, the immunization rate was 50.2%. Furthermore, if the clinician neither recommended nor offered vaccine, the rate was only 20.6%.[2]

Meningococcal disease: Recognizing risk

When it comes to discussing MenACWY* with patients and parents, focus can be placed on:

- The life-threatening nature of the disease
- A well-documented period of increased risk for adolescents and young adults
- The importance of being vaccinated with both the first and second doses of meningococcal ACWY vaccine

The first MenACWY dose is recommended at 11 or 12 years of age and a second (booster) dose at 16 years of age.[3] Dose #1 has been recommended since 2005, and the second dose was recommended in 2010. Unfortunately, immunization rates for dose #2 are lagging. The Centers for Disease Control and Prevention notes that "A MenACWY booster dose helps protect adolescents during the ages they are at highest risk."[4]

Having the Conversation

Be sure to include meningococcal disease prevention as part of the anticipatory guidance for your teenage and young adult patients.

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* MenACWY is a vaccine that helps protect against meningococcal disease resulting from infection with serogroups A, C, W, or Y.

Talking points

When it comes to discussing MenACWY with patients and parents, focus can be placed on:

- Meningococcal disease is rare but can be deadly for young people your age.
- You are at increased risk from your mid-to-late teens into your early 20s.
- Meningococcal disease can come on suddenly, without warning, and can cause shock, coma, and death within hours of the first symptom.
- About 15% of people who develop meningococcal disease will die, even with appropriate antibiotic treatment.
- Up to 20% of people who survive meningococcal disease will suffer lifelong disability, such as loss of limbs, loss of hearing, or brain damage.
- Meningococcal vaccines are safe, effective, and recommended for adolescents.
- 2 doses of MenACWY are recommended for adolescents, the first dose at 11 or 12 years of age and a second dose at 16 years of age.

Close the conversation with a strong recommendation for the vaccine. It will make a difference.

General Tips for Talking with Adolescent Patients

Adolescents are at a time in life when they are trying to develop a personal identity, test boundaries, and seek independence. The following tips may help facilitate conversations:

- In educating adolescents and their parents about the importance of timely immunizations, take care to emphasize the potential severity of, and the patient's susceptibility to, specific vaccine-preventable diseases.
- Listen carefully and respond to the patient honestly, directly, and factually, in a caring and nonjudgmental manner.
- Be attuned to the patient's developmental stage, taking into account age, gender, and cognitive and psychosocial development.
- Assure the patient that you will keep confidential whatever he or she tells you (subject to whatever legal limitations may apply); this will encourage candid discussion of sensitive concerns.

References

1. Centers for Disease Control and Prevention (CDC). Standards for Adult Immunization Practice. www.cdc.gov/vaccines/hcp/adults/for-practice/standards/index.html
2. Centers for Disease Control and Prevention (CDC). Influenza and Tdap Coverage Among Pregnant Women–United States. April 2020. *MMWR.* 2020;69 (39); 1391-1397.
3. Centers for Disease Control and Prevention. Meningococcal Vaccination: Recommendations of the Advisory Committee on Immunization Practices, United States, 2020. *MMWR* 2020;69 (No. RR-9);1-41. https://www.cdc.gov/mmwr/volumes/69/rr/pdfs/rr6909a1-H.pdf
4. CDC. Meningococcal Vaccination for Adolescents: Information for Healthcare Professionals. Available at https://www.cdc.gov/vaccines/vpd/mening/hcp/adolescent-vaccine.html

NEW RESOURCES	
Resource Name:	**Meningitis B Action Project launches back-to-school resources to encourage vaccination; new social media series titled "Be a Team Player"**
Source:	Immunization Action Coalition (IAC) / Meningitis B Action Project
Link(s):	Social media graphics
Topic:	Core Strategy: Strengthen Vaccination Communications
Audience:	Providers
Description:	The Meningitis B Action Project has launched a variety of back-to-school resources to encourage vaccination against meningococcal disease. Resources include: Social media graphics to encourage adolescent vaccination, including the new "Be a Team Player" and "It Takes Two" series
Last Updated:	08/2021
Resource Name:	**Handouts for Patients & Staff**
Source:	Immunization Action Coalition (IAC)
Link:	Vaccination handouts and educational materials for patients and healthcare professionals (immunize.org)
Topic:	General Vaccination Resources
Audience:	Providers – Parents
Description:	Top resources for IQIP include: Handouts: Adolescent Vaccination (immunize.org) Handouts about Children's Vaccines for Parents (immunize.org) Easy-to-Read Q&As – Handouts about Vaccines for Healthcare Settings (immunize.org) Strategies and Policies for Healthcare Settings: Educational Materials for Healthcare Professionals (immunize.org) Vaccine Standing Orders for Healthcare Providers (immunize.org) Handouts for Healthcare Professionals to Help Address Vaccine Hesitancy of Patients or Parents (immunize.org) Vaccine Recommendations: Educational Materials for Healthcare Professionals (immunize.org) Promotional Materials and Flyers from the Immunization Action Coalition (immunize.org)
Last Updated:	09/2021
Resource Name:	**Pediatric Practice Marketing and Communications**
Source:	American Academy of Pediatrics (AAP)
Link:	Pediatric Practice Marketing and Communications (aap.org)
Topic:	Core Strategy: Strengthen Vaccination Communications
Audience:	Providers
Description:	Patient engagement processes in health care have undergone dramatic change using electronic communications. To remain relevant as trusted sources of information, pediatric practices should stay up to date with current communication methods to meet patients and families where they are. This resource includes effective methods for marketing the pediatric practice to new patients as well as effectively communicating with established ones. It also includes useful tips and strategies for using social media to market the practice and to share information with patients/families, resources on creating and maintaining an informative practice website and disseminating important information to patients/families through on-hold messaging.
Last Updated:	08/2021
Resource Name:	**Team Huddles and Meetings**
Source:	American Academy of Pediatrics (AAP)
Link:	Team Huddles and Meetings

Topic:	General Vaccination Resources
Audience:	Providers
Description:	Policy and procedure on team huddles and staff meetings.
Resource Name:	**EQIPP: Immunizations - Strategies for Success**
Source:	American Academy of Pediatrics (AAP)
Link:	EQIPP: Immunizations - Strategies for Success - AAP
Topic:	Training and Education
Audience:	Providers
Description:	EQIPP: Immunizations - Strategies for Success **–** MOC **AVAILABLE:** **12/18/2020 - 12/17/2023** *This course is eligible for a total of 50 ABP MOC 4 points. Points can be claimed based on the number of tracks completed (25 MOC 4 points for completion of the 19-23 months track; 25 MOC 4 points for completion of the Adolescent track).* **Course Goals** This EQIPP course is designed to identify immunization rates in your practice, uncover barriers to immunization delivery systems, and provide techniques to overcome those barriers through the use of clear aims that reflect expert principles and proven quality improvement methods and tools. The course features two tracks; the 19-23 months old track and the Adolescent track with data collection activities specific to each population.
Last Updated:	12/2020
Resource Name:	**Challenging Cases: Vaccine Hesitancy**
Source:	American Academy of Pediatrics (AAP)
Link:	Challenging Cases: Vaccine Hesitancy - AAP
Topic:	Training and Education
Audience:	Providers
Description:	Challenging Cases: Vaccine Hesitancy **AVAILABLE:** **11/04/2019 - 11/03/2022** *This course offers no CME or certificate* Parents often have questions and concerns about vaccines and they look to pediatricians and other medical professionals for answers. Yet 87% of physicians have encountered parents who have refused a vaccine for their child. How can you better understand and address common parental concerns? This course provides strategies to promote vaccine confidence in vaccine-hesitant parents in a time efficient but effective manner, including case studies on infant vaccination and MMR vaccination.
Last Updated:	11/2019
Resource Name:	**HPV Vaccine: When, Why, and How**
Source:	American Academy of Pediatrics (AAP)
Link:	HPV Vaccine: When, Why, and How - AAP
Topic:	Training and Education
Audience:	Providers
Description:	HPV Vaccine: When, Why, and How – MOC **AVAILABLE:** **01/07/2020 - 01/06/2023**

	The main goals of this course are to motivate clinicians to protect more patients against HPV infection and its outcomes, and to provide clinicians with tools to support their efforts. This course will cover the following 3 topics: • HPV Vaccine and Cancer Prevention • Recommending HPV Vaccine • Increasing HPV Vaccine Rates
Last Updated:	01/2020
Resource Name:	**Where We Stand: Immunizations**
Source:	HealthyChildren.org
Link:	Where We Stand: Immunizations - HealthyChildren.org
Topic:	Core Strategy: Give a Strong Vaccine Recommendation
Audience:	Providers
Description:	The American Academy of Pediatrics (AAP) believes that immunizations are the safest and most cost-effective way of preventing disease, disability, and death. We urge parents to make sure that their children are immunized against dangerous childhood diseases since it is always better to prevent a disease than to have to treat it or live with the consequences of having it.
Last Updated:	04/2021
Resource Name:	**Communicating with Families and Promoting Vaccine Confidence**
Source:	American Academy of Pediatrics (AAP)
Link:	Communicating with Families and Promoting Vaccine Confidence (aap.org)
Topic:	Core Strategy: Give a Strong Vaccine Recommendation
Audience:	Providers
Description:	You are families' most trusted source of immunization information. Use these resources to communicate effectively. AAP Immunization Campaign Toolkit: This Immunization Campaign Toolkit offers infographics, memes, images, articles and videos, optimized for sharing on social media, that you can use to help provide accurate information about vaccines to parents in your networks Communicating Effectively About Immunizations: The AAP offers communication aids, such as childhood and adolescent flipcharts, and risk communication videos to guide your vaccine conversations with parents. Responding to Common Parental Concerns: You may hear some concerns or questions from parents about vaccines. Use this tool to access clear facts about common concerns parents may have. Vaccine Hesitant Parents: Learn more about the types of parental attitudes toward immunizations and simple strategies for speaking to parents about vaccines. Challenging Cases: Vaccine Hesitancy
Last Updated:	07/2021
Resource Name:	**Human Papillomavirus and Other Vaccines Recommended for Adolescents**
Source:	American Academy of Pediatrics (AAP)
Link:	Human Papillomavirus and Other Vaccines Recommended for Adolescents (aap.org)
Topic:	Core Strategy: Give a Strong Vaccine Recommendation
Audience:	Providers
Description:	Pediatricians play an important role in immunizing adolescents with HPV and other age-appropriate vaccines. Why AAP Recommends Initiating HPV Vaccine as Early As Age 9 Learn why the AAP recommends starting the HPV vaccine series as early as age 9. HPV Vaccine: Same Way Same Day™, is a brief, interactive role-play simulation designed to enhance

	healthcare providers' ability to introduce the HPV vaccine and to address HPV vaccine hesitant parents' concerns. This application was developed by immunization experts, the AAP, the Academic Pediatric Association, and Kognito (a health simulation company).
Last Updated:	08/2021
Resource Name:	**I Get It! CDC Digital Media Toolkit: 2021-22 Flu Season**
Source:	Centers for Disease Control and Prevention (CDC)
Link:	I Get It! | CDC - Main Page CDC Digital Media Toolkit: 2021-22 Flu Season | CDC
Topic:	Seasonal Flu Vaccination / Core Strategy: Give a Strong Vaccine Recommendation
Audience:	Providers
Description:	CDC's seasonal flu vaccination campaign materials are available to assist partners in communicating about the importance of vaccination. This digital toolkit includes details on events/activities, sample social media and newsletter content, graphics, web assets, and media prep material. This material is downloadable, shareable, and some of the material is customizable. This social media toolkit includes customizable graphic frames for you to add your picture, sample social media messages, and social media graphics to encourage members of your community share the reason they get their flu vaccine with the hashtag #IGetIt.
Last Updated:	09/2021

Sample Vaccine Policy Statement

Ready for you to adapt for your practice

Use the vaccine policy statement below as is, or modify it to reflect your practice's own strong statement of support for the vital role vaccination plays in safeguarding the health of children. Your practice's clearly expressed commitment to immunization can be powerfully persuasive with parents who are hesitant to have their child vaccinated because of scientifically invalid information they have encountered on the Internet or through the news media. This policy statement, originally developed by clinicians at All Star Pediatrics in Lionville, Pennsylvania, has been modified by the Immunization Action Coalition. All Star Pediatrics posts their policy in every exam room and gives it to parents at prenatal "meet and greet" and newborn clinic visits. As a result, parents new to All Star Pediatrics know exactly where their doctors stand on immunization, and the families of established patients feel supported in the choice they've made to immunize their children. All Star Pediatrics' policy statement was originally published as a letter to the editor in AAP News, *May 2008, by Bradley J. Dyer, MD, FAAP, and his colleagues at All Star Pediatrics.*

[Your Practice Name] Vaccine Policy Statement

We firmly believe in the effectiveness of vaccines to prevent serious illness and to save lives.

We firmly believe in the safety of our vaccines.

We firmly believe that all children and young adults should receive all of the recommended vaccines according to the schedule published by the Centers for Disease Control and Prevention and the American Academy of Pediatrics.

We firmly believe, based on all available literature, evidence, and current studies, that vaccines do not cause autism or other developmental disabilities. We firmly believe that thimerosal, a preservative that has been in vaccines for decades and remains in some vaccines, does not cause autism or other developmental disabilities.

We firmly believe that vaccinating children and young adults may be the single most important health-promoting intervention we perform as healthcare providers, and that you can perform as parents/caregivers. The recommended vaccines and the vaccine schedule are the results of years and years of scientific study and data gathering on millions of children by thousands of our brightest scientists and physicians.

This said, we recognize that there has always been and will likely always be controversy surrounding vaccination. Indeed, Benjamin Franklin, persuaded by his brother, was opposed to smallpox vaccine until scientific data convinced him otherwise. Tragically, he had delayed inoculating his favorite son Franky. The boy contracted smallpox and died at the age of 4, leaving Franklin with a lifetime of guilt and remorse. In his autobiography, Franklin wrote:

> "*In 1736, I lost one of my sons, a fine boy of four years old, by the smallpox…I long regretted bitterly, and still regret that I had not given it to him by inoculation. This I mention for the sake of parents who omit that operation, on the supposition that they should never forgive themselves if a child died under it, my example showing that the regret may be the same either way, and that, therefore, the safer should be chosen.*"

The vaccine campaign is truly a victim of its own success. It is precisely because vaccines are so effective at preventing illness that we are even discussing whether or not they should be given. Because of vaccines, many of you have never seen a child with polio, tetanus, whooping cough, bacterial meningitis, or even chickenpox, or known a friend or family member whose child died of one of these diseases. Such success can make us complacent or even lazy about vaccinating.

But such an attitude, if it becomes widespread, can only lead to tragic results. After publication of an unfounded accusation (later retracted) that MMR vaccine caused autism in 1998, many Europeans chose not to vaccinate their children. As a result of underimmunization, Europe experienced large outbreaks of measles, with several deaths from disease complications. In 2012, there were more than 48,000 cases of pertussis (whooping cough) in the United States, resulting in 22 deaths. Most victims were infants younger than six months of age. Many children who contracted the illness had parents

CONTINUED ON THE NEXT PAGE ▶

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Adapted from All Star Pediatrics, Lionville, Pennsylvania

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www.immunize.org/catg.d/p2067.pdf ▪ Item #P2067 (8/16)

who made a conscious decision not to vaccinate. In 2015, there was a measles outbreak in Disneyland, California (probably started by an infected park visitor who had traveled from the Philippines). The outbreak eventually spread to 147 people and, again, many were too young to have been vaccinated.

When you don't vaccinate, you take a significant risk with your child's health and the health of others around them. By not vaccinating, you also take selfish advantage of thousands of others who do vaccinate their children, thereby decreasing the likelihood that your child will contract a vaccine-preventable disease. We feel that refusing to vaccinate is self-centered and unacceptable.

We are making you aware of these facts not to scare you or coerce you, but to emphasize the importance of vaccinating your child. We recognize that the choice may be a very emotional one for some parents. We will do everything we can to convince you that vaccinating according to the schedule is the right thing to do. However, **should you have doubts, please discuss these with your healthcare provider in advance of your visit**. In some cases, we may alter the schedule to accommodate parental concerns or reservations. **Please be advised, however, that delaying or "breaking up the vaccines" to give one or two at a time over two or more visits goes against expert recommendations, and can put your child at risk for serious illness (or even death) and goes against our medical advice as providers at [Your practice name here].** Such additional visits will require additional co-pays on your part. Please realize that you will also be required to sign a "Refusal to Vaccinate" acknowledgement in the event of lengthy delays.

Because we are committed to protecting the health of your children through vaccination, we require all of our patients to be vaccinated. Infants will receive all age-appropriate recommended vaccines by three months of age, with additional recommended vaccines as well as booster doses by two years of age. Children will receive additional recommended booster doses by the time they are seven years old, and will be given recommended 11–12-year preteen vaccinations by the time they are 13 years old. We will complete 16-year teen vaccinations before each child's 17th birthday. And, we will also give your child/teen an annual influenza vaccination unless they receive it at a school clinic or pharmacy.

Finally, if you should absolutely refuse to vaccinate your child despite all our efforts, we will ask you to find another healthcare provider who shares your views. We do not keep a list of such providers, nor would we recommend any such physician. Please recognize that by not vaccinating, you are putting your child at unnecessary risk for life-threatening illness and disability, and even death.

As medical professionals, we feel very strongly that vaccinating your child on schedule with currently available vaccines is absolutely the right thing to do to protect all children and young adults. Thank you for taking the time to read this policy. Please feel free to discuss any questions or concerns you may have about vaccines with any one of us.

All the healthcare providers of [Your practice name]
List names and signatures of healthcare providers, if desired.

Communicating the Benefits of Influenza Vaccine during COVID-19

Influenza (flu) severity varies from year to year, but flu always brings serious consequences. Flu outbreaks were limited in the 2020–2021 season due to widespread use of COVID-19 prevention measures like masks and social distancing. But flu viruses never went completely away. As COVID-19 prevention measures are relaxed, it's just a matter of time before flu increases, bringing with it serious complications like pneumonia and heart attacks.

Flu vaccination is the best way to prevent flu and its complications. Everyone age 6 months and older is recommended to get a yearly flu vaccine. This can markedly lower the risk of influenza-related illness, hospitalization, and death. And because flu and COVID-19 share many symptoms, preventing flu means fewer people will need to seek medical care and testing for flu as well as COVID-19, saving time, money, and stress. Flu vaccine may be given at the same time as COVID-19 vaccine. Take advantage of every opportunity to remind patients about the importance of flu vaccination.

CDC estimates the annual impact of flu from 2010–2020* ranged from:

9.3 million–45 million flu **illnesses**	4.3 million–21 million flu **medical visits**	140,000–810,000 flu **hospitalizations**	12,000–61,000 flu **deaths**

*SOURCE: CDC *Disease Burden of Influenza* (www.cdc.gov/flu/about/burden)

Vaccination rates* remain well below optimal levels:

59% children 6 months–17 years
50% adults 18+ years
75% adults 65+ years
76% healthcare personnel
55% pregnant women

*Estimates from the 2020–21 influenza season.
SOURCE: CDC *FluVaxView* (www.cdc.gov/flu/fluvaxview)

What are the Benefits of Seasonal Flu Vaccine?

Research shows flu vaccination[1]:

Reduces Hospitalization and Death

- ✔ Pediatric deaths from flu were cut in half for children with underlying high-risk medical conditions and by two-thirds for healthy children
- ✔ Influenza hospitalizations were cut in half for all adults (including those 65+ years of age)
- ✔ Influenza hospitalizations dropped dramatically among people with chronic health conditions – by 79% for people with diabetes and 52% for those with chronic lung disease
- ✔ Vaccinating long-term care facility (LTCF) staff reduces hospitalizations and deaths in LTCF residents

Reduces Severity of Illness in Hospitalized Individuals

- ✔ Among adults hospitalized with flu, intensive care unit (ICU) admissions decreased by more than half (59%), and they spent fewer days in the ICU if vaccinated
- ✔ Children's risk of admission to a pediatric intensive care unit (PICU) for flu-related illness was cut by almost 75%

Reduces Risks for Major Cardiac Events

- ✔ Risk of a major cardiac event (e.g., heart attack) among adults with existing cardiovascular disease was reduced by more than one-third

Protects Pregnant Women and Their Babies

- ✔ For pregnant women, flu-associated acute respiratory infections were cut in half, and flu-associated hospitalizations were reduced by 40%
- ✔ Influenza illnesses and influenza-related hospitalizations in infants under 6 months of age fell by half when their mothers were vaccinated

Tips
for Discussing Flu Vaccine

- **Recommend flu vaccine at every clinical encounter:** "I strongly recommend you get a flu vaccination today. Flu vaccine may be given at the same time as COVID-19 vaccine."
- **Keep it simple:** "Flu vaccine helps reduce risk of hospitalization and death."
- **Use a presumptive approach:** "Today we are giving you your annual flu vaccination."
- **Communicate why we vaccinate:** "Vaccination prevents flu and severe outcomes of flu." "Preventing the flu means preventing missed workdays, doctor appointments, and testing because of flu symptoms. Flu vaccination can also help prevent flu and COVID-19 co-infections, which can cause more severe illnesses."[2]
- **Communicate the variability and unpredictability of flu:** "Flu was limited when most people followed COVID-19 precautions, but the spread of flu is likely to resume as fewer people wear masks or socially distance. The spread of other respiratory illnesses has already increased."
- **Acknowledge that flu vaccination is not always a perfect match with the circulating virus types. But flu and flu-related severe illnesses are common.** "The vaccine is the best way to reduce your risk of flu and its negative outcomes."

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immunization action coalition IAC immunize.org
www.immunize.org/catg.d/p3115.pdf • Item #P3115 (10/21)

FOOTNOTES

1 CDC. What are the benefits of flu vaccination? www.cdc.gov/flu/prevent/vaccine-benefits.htm
2 Dao, 2021, *Journal of Clinical Virology Plus*. DOI: 10.1016/j.jcvp.2021.100036

ALL Pediatrics Vaccine Policy Statement

We firmly believe in the effectiveness of vaccines to prevent serious illness and to save lives.

We firmly believe in the safety of our vaccines.

We firmly believe that all children and young adults should receive all of the recommended vaccines according to the schedule published by the Centers for Disease Control and the American Academy of Pediatrics.

We firmly believe, based on all available literature, evidence and current studies, that vaccines do not cause autism or other developmental disabilities.

We firmly believe that vaccinations may be the single most important intervention we perform as health care providers and the most important health intervention that you choose for your children. The recommended vaccines and the published schedule are the results of years of scientific study and accumulation of data on millions of children by the brightest scientist and physicians in our country.

Unfortunately, the vaccine campaign is truly a victim of its own success. It is precisely because vaccines are so effective at preventing illness that parents are discussing whether or not they should be given. Because of vaccines, most parents have never seen a child with polio, tetanus, whooping cough, bacterial meningitis or even chickenpox; most people have never heard of a friend or family member who died from one of these diseases. Such successes can make us complacent about the need for vaccination. However, as such opinions have become more widespread, we are witnessing the resurgence of many of these diseases. Unfortunately, this will likely lead to tragic results.

We present these facts not to scare or coerce you, but to emphasize the importance of vaccinating your child. We recognize that the choice may be an emotional one, and we will try our best to address your concerns and help explain that vaccinations are in the best interest of your child and the community as a whole.

In some cases, we will consider altering the schedule to accomodate parental reservations. However, please be advised that modifying the schedule to give only one or two vaccines at a time goes against expert recommendation and can put your child at risk for serious illness or even death. If your child is not fully vaccinated, be aware that your child may require more invasive testing in the event of illness. Also, your child will be at risk if you travel internationally, because many other countries have higher incidences of vaccine-preventable disease.

In the event that you wish to request an altered vaccination schedule, we will charge an additional $30 fee for all additional nursing visits for vaccine administration.

Additionally, as of 1/1/2017, ALL Pediatrics will no longer accept patient families who have no intention of vaccinating their infants. If you are requesting an altered vaccination schedule, we require initiation of vaccinations by the age of 6 months with a plan to complete the primary vaccination series by age two years.

We also will not accept transfers of unvaccinated children over the age of 6 months into our practice. Children who transfer to ALL Pediatrics will be given 30 days in which to provide confirmation of all childhood vaccines that are currently due per the AAP's vaccine schedule, or will need to initiate vaccinations within those 30 days.

We will gladly address any additional items you would like to discuss on an individual basis.

After the Shots…

Your child may need extra love and care after getting vaccinated. Some vaccinations that protect children from serious diseases also can cause discomfort for a while. Here are answers to questions many parents have after their children have been vaccinated. If this sheet doesn't answer your questions, call your healthcare provider.

Vaccinations may hurt a little… but disease can hurt a lot!

Call your healthcare provider right away if you answer "yes" to any of the following questions:

- ☐ Does your child have a temperature that your healthcare provider has told you to be concerned about?
- ☐ Is your child pale or limp?
- ☐ Has your child been crying for more than 3 hours and just won't quit?
- ☐ Is your child's body shaking, twitching, or jerking?
- ☐ Is your child very noticeably less active or responsive?

▶ *Please see page 2 for information on the proper amount of medicine to give your child to reduce pain or fever.*

What to do if your child has discomfort

I think my child has a fever. What should I do?

Check your child's temperature to find out if there is a fever. An easy way to do this is by taking a temperature in the armpit using an electronic thermometer (or by using the method of temperature-taking your healthcare provider recommends). If your child has a temperature that your healthcare provider has told you to be concerned about or if you have questions, call your healthcare provider.

Here are some things you can do to help reduce fever:

- Give your child plenty to drink.
- Dress your child lightly. Do not cover or wrap your child tightly.
- Give your child a fever- or pain-reducing medicine such as acetaminophen (e.g., Tylenol) or ibuprofen (e.g., Advil, Motrin). The dose you give your child should be based on your child's weight and your healthcare provider's instructions. See the dose chart on page 2. *Do not give aspirin.* Recheck your child's temperature after 1 hour. Call your healthcare provider if you have questions.

My child has been fussy since getting vaccinated. What should I do?

After vaccination, children may be fussy because of pain or fever. To reduce discomfort, you may want to give your child a medicine such as acetaminophen or ibuprofen. See the dose chart on page 2. *Do not give aspirin.* If your child is fussy for more than 24 hours, call your healthcare provider.

My child's leg or arm is swollen, hot, and red. What should I do?

- Apply a clean, cool, wet washcloth over the sore area for comfort.
- For pain, give a medicine such as acetaminophen or ibuprofen. See the dose chart on page 2. *Do not give aspirin.*
- If the redness or tenderness increases after 24 hours, call your healthcare provider.

My child seems really sick. Should I call my healthcare provider?

If you are worried **at all** about how your child looks or feels, call your healthcare provider!

HEALTHCARE PROVIDER: PLEASE FILL IN THE INFORMATION BELOW.

If your child's temperature is _____ °F or _____ °C or higher, or if you have questions, call your healthcare provider.

Healthcare provider phone number _____

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www.immunize.org/catg.d/p4015.pdf • Item #P4015 (2/19)

Medicines and Doses to Reduce Pain and Fever

Choose the proper medicine, and measure the dose accurately.

1. Ask your healthcare provider or pharmacist which medicine is best for your child.
2. Give the dose based on your child's weight. If you don't know your child's weight, give the dose based on your child's age. Do not give more medicine than is recommended.
3. If you have questions about dosage amounts or any other concerns, call your healthcare provider.
4. **Always use a proper measuring device when giving acetaminophen liquid (e.g., Tylenol) or ibuprofen liquid (e.g., Advil, Motrin):**
   - **Use the device enclosed in the package.**
   - **If you misplace the device**, consult your healthcare provider or pharmacist for advice.
   - **Meal-time spoons are not accurate measures.** Never use a meal-time spoon for giving medication.

Take these two steps to avoid causing a serious medication overdose in your child.

1. Don't give your child a larger amount of acetaminophen (e.g., Tylenol) or ibuprofen (e.g., Motrin, Advil) than is shown in the table below. Too much of any of these medicines can be extremely dangerous.
2. When you give your child acetaminophen or ibuprofen, don't also give them over-the-counter cough or cold medicines. This can cause a medication overdose because cough and cold medicines often contain acetaminophen or ibuprofen. In fact, to be safe, don't ever give over-the-counter cough and cold medicines to your child unless you talk to your child's healthcare provider first.

ACETAMINOPHEN (Tylenol or another brand): How much to give?

Give every 4 to 6 hours, as needed, no more than 5 times in 24 hours (unless directed to do otherwise by your healthcare provider).

Child's weight	Child's age	Infants' or children's liquid 160 mg in each 5 mL	Children's chewables – current product 160 mg in each tablet	~~Infants' drops~~ 80 mg in each 0.8 mL	~~Children's chewables~~ 80 mg in each 0.8 mL
6–11 lbs (2.7–5 kg)	0–3 mos	Advised dose*_____		OLD PRODUCT Throw away this product. It is out of date and should not be used.	OLD PRODUCT Throw away this product. It is out of date and should not be used.
12–17 lbs (5.5–7.7 kg)	4–11 mos	**2.5 mL**			
18–23 lbs (8.2–10.5 kg)	12–23 mos	**3.75 mL**			
24–35 lbs (10.9–15.9 kg)	2–3 yrs	**5 mL**	**1 tablet**		
36–47 lbs (16.4–21.4 kg)	4–5 yrs	**7.5 mL**	**1½ tablets**		
48–59 lbs (21.8–26.8 kg)	6–8 yrs	**10 mL**	**2 tablets**		
60–71 lbs (27.3–32.3 kg)	9–10 yrs	**12.5 mL**	**2½ tablets**		
72–95 lbs (32.7–43.2 kg)	11 yrs	**15 mL**	**3 tablets**		

IBUPROFEN (Advil, Motrin, or another brand): How much to give?

Give every 6 to 8 hours, as needed, no more than 4 times in 24 hours (unless directed to do otherwise by your healthcare provider).

Child's weight	Child's age	Infants' drops 50 mg in each1.25 mL 	Children's liquid 100 mg in each 5 mL 	Children's chewables or junior tablets 100 mg in each tablet	~~Children's chewables~~ 50 mg in each tablet
less than 11 lbs (5 kg)	0–5 mos				
12–17 lbs (5.5–7.7 kg)	6–11 mos	**1.25 mL**	Advised dose*_____		OLD PRODUCT Throw away this product. It is out of date and should not be used.
18–23 lbs (8.2–10.5 kg)	12–23 mos	**1.875 mL**	Advised dose*_____		
24–35 lbs (10.9–15.9 kg)	2–3 yrs		**5 mL**	**1 tablet**	
36–47 lbs (16.4–21.4 kg)	4–5 yrs		**7.5 mL**	**1½ tablets**	
48–59 lbs (21.8–26.8 kg)	6–8 yrs		**10 mL**	**2 tablets**	
60–71 lbs (27.3–32.3 kg)	9–10 yrs		**12.5 mL**	**2½ tablets**	
72–95 lbs (32.7–43.2 kg)	11 yrs		**15 mL**	**3 tablets**	

* **HEALTHCARE PROVIDER:** Please fill in the advised dose.

Immunization Action Coalition • www.immunize.org/catg.d/p4015.pdf • Item #P4015 (2/19)

All Kids Need Hepatitis B Shots!

What is hepatitis B?

Hepatitis B is a serious liver disease caused by the hepatitis B virus. This virus can enter the bloodstream, attack the liver, and cause severe illness. In some cases, the virus can remain in the body for a lifetime and cause ongoing liver damage.

How do children and teens get hepatitis B?

Lots of ways. Hepatitis B virus can be spread by:

- coming in contact with an infected person's blood or body fluids
- sharing toothbrushes, razors, or needles of an infected person
- human bites
- sex with an infected person
- ear piercing, body piercing, or tattooing with unsterile equipment

A series of shots can prevent this very serious disease!

Why do my children need hepatitis B shots?

All the major medical organizations in the United States agree that all children 0–18 years of age need a series of hepatitis B shots in order to be protected from this disease. Newborn babies should receive their first shot of hepatitis B vaccine within 24 hours of birth. If your children or teens were not vaccinated against hepatitis B when they were younger, vaccinate them now.

Over half of parents don't know how their children got infected with hepatitis B virus

Is my child at increased risk for infection with hepatitis B virus?

All children 0–18 years of age need hepatitis B vaccine!

Anyone can get infected with this virus. However, children who were born, or whose parents were born, outside the United States where hepatitis B virus infection is a serious problem may be at increased risk for getting infected.

Some of the places where hepatitis B is a serious problem include Asia, Africa, the Pacific Islands, Eastern Europe, the former Soviet Union, and some parts of South America. Check with your doctor or local health department if you have questions about this.

If you or your children were born in a country where infection with hepatitis B virus is common, your doctor may want to do blood tests on your children to find out if they have already been infected with this virus. Testing can be done at the same visit as vaccinations.

How safe is this vaccine?

Hepatitis B vaccine is one of the safest vaccines available. It has been used in the United States since 1982 and has been shown to be safe and effective.

Everyone needs vaccinations!

Vaccinations are free or low cost for children when families can't afford them. Call your healthcare provider or local/state health department to find out where to go for affordable vaccinations. You can access a listing of telephone numbers for state immunization programs at www.immunize.org/coordinators. Your child's health depends on timely vaccinations.

And here's a friendly reminder for parents:

Adults need vaccines, too! Call your clinic or health department to find out which vaccines you need and when your next ones are due. Your children are counting on you to stay healthy!

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Technical content reviewed by the Centers for Disease Control and Prevention

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www.immunize.org/catg.d/p4055.pdf • Item #P4055 (11/17)

Brief Introduction to Hepatitis B for Parents of Adopted Children

by Sarah Jane Schwarzenberg, MD

What is hepatitis B?

Hepatitis B is a viral infection of the liver. Most of the time, adults who become infected with hepatitis B recover fully after an illness that may be either very mild or very severe. Children from areas where hepatitis B is common (Africa, Asia, and Eastern Europe) are frequently infected with hepatitis B early in life when it is more likely that it will become a chronic infection. Some chronically infected people will develop cirrhosis (liver scarring), liver failure, or liver cancer from hepatitis B. They can also transmit the virus to others.

What tests should be done if my child was adopted from an area where hepatitis B is common?

Families adopting children from areas where hepatitis B is common should have their children tested as soon as possible after arrival in this country. Tests done in the country of origin may not be reliable. Ideally, this would be done as part of a comprehensive evaluation by a clinic specializing in the unique health needs of adopted children. Hepatitis B tests that might be done include:

- **Hepatitis B surface antigen (HBsAg) and hepatitis B "e" antigen (HBeAg)**
  If either of these is positive, the patient is infected.
- **Hepatitis B surface antibody (anti-HBs or HBsAb)**
  If this is positive, the patient had hepatitis B in the past or was vaccinated with hepatitis B vaccine.
- **Hepatitis B core antibody (anti-HBc or HBcAb)**
  If this is positive, the patient has had exposure to the hepatitis B virus.

In some cases, another series of these tests six months later may be necessary to determine if the patient is chronically infected.

Other tests that may be performed include tests for other hepatitis viruses, tests to determine the degree of liver injury (liver enzymes), and tests of nutrition and liver function.

If my child has hepatitis B, what do we do next?

If a child is determined to be infected with hepatitis B (whether the infection is known to be chronic or not), it is essential that any family members or friends (including children) with intimate contact with the child be immunized against hepatitis B. This is especially urgent if the infected child is less than one year of age. Even the best disease prevention measures may fail when contact is close and loving. It is better to immunize these close contacts against hepatitis B than to have them afraid to lavish affection on the child. Your child's physician can help you decide who needs immunization. If an unimmunized person is exposed to blood infected with hepatitis B virus, a physician should be notified immediately to initiate measures to prevent the exposed individual from developing the disease.

Families adopting children from areas where hepatitis B is common should have their children tested as soon as possible after arrival in this country.

Hepatitis B is transmitted via blood and body secretions (not urine or stool). Families need age-appropriate counseling on prevention of disease transmission at the time of diagnosis and at intervals throughout the child's life, with special emphasis on the risks of sexual transmission as the child approaches adolescence.

If the child is found to be chronically infected, lifelong follow-up to detect the development of liver disease is important.

Families should receive information on the expected course of the disease. This can usually occur on routine annual visits to the child's physician. A child who already has significant liver disease may need referral to a pediatric gastroenterologist to determine the degree of injury and whether any treatment is indicated. There is no specific therapy that will "cure" hepatitis B. There are several licensed antiviral drugs used to suppress disease activity in some patients with liver disease, but they should only be administered after consultation with a pediatric gastroenterologist. In addition, patients with severe liver disease should have aggressive nutritional management tailored to the specific deficiencies that develop in patients with liver disease.

Summary

Hepatitis B is a complex disease that raises problems for both the child and his or her family. This article provides only an outline of the issues. Parents of children who are healthy but chronically infected will need information and immunization, and their children will need good medical follow-up. Children who have significant liver injury will also need careful medical management. In short, prospective parents of children with hepatitis B should seek out health care providers with expertise in this disease.

Resources for Parents

International Adoption Clinic (health professionals with expertise in medical problems unique to children adopted from foreign countries): University of Minnesota, 612-624-1164 • https://adoption.umn.edu

Pediatric Gastroenterology, Hepatology, and Nutrition Division, University of Minnesota (physicians with expertise in liver disease in children): East Building, 6th Floor 8952C, 2450 Riverside Ave., Minneapolis, Minnesota 55454
(612) 624-1133 • www.peds.umn.edu/gi

Parents of Kids with Infectious Diseases (PKIDS)
(877) 557-5437 • www.pkids.org

Immunization Action Coalition (IAC)
www.immunize.org
www.vaccineinformation.org

Dr. Schwarzenberg is a pediatric gastroenterologist and an associate professor in the Department of Pediatrics, Division of Gastroenterology and Nutrition, University of Minnesota. She is a participant in the NIH Hepatitis B Research Network. She is also a member of IAC's Advisory Board.

Chickenpox is a serious disease…
Make sure your child is protected!

What is chickenpox?

Chickenpox (varicella) is a disease caused by a virus. Most people with chickenpox get very itchy blisters and sores all over their body.

How do you catch chickenpox?

Chickenpox is spread person-to-person through the air. It is very contagious.

Is chickenpox serious?

Yes, it can be a serious disease for people of all ages. The disease can cause serious skin infections, pneumonia, brain damage, and even death. Chickenpox is especially dangerous for people whose immune systems are weak because of illness or medications.

Is my child at risk?

Yes. Chickenpox is still infecting people in the U.S. and the rest of the world. It is extremely contagious and can be spread by an infected person before they even know they're sick.

Ask your child's healthcare provider if your child is up to date for all vaccines!

How can I protect my child from chickenpox?

You can protect your child from chickenpox with vaccination.

All children should get 2 doses of chickenpox vaccine starting at 1 year of age.

Some teens and adults may also need this vaccine if they didn't get 2 doses of the vaccine or chickenpox disease when they were younger.

▶ For more information, visit www.vaccineinformation.org

For other vaccine handouts in this series,
visit www.immunize.org/vaccine-summaries

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Technical content reviewed by the Centers for Disease Control and Prevention
Saint Paul, Minnesota ▪ www.immunize.org
www.immunize.org/catg.d/p4302.pdf ▪ Item #P4302 (6/13)

Clear Answers and Smart Advice About Your Baby's Shots

By Ari Brown, MD, FAAP

Dr. Brown received her medical degree from Baylor College of Medicine in Houston, Texas; she did her pediatric residency at Harvard Medical School/Boston Children's Hospital. In private practice since 1995, Dr. Brown is perhaps best known as the coauthor of the 411 parenting book series – ***Expecting 411: Clear Answers and Smart Advice for Your Pregnancy***, ***Baby 411***, and ***Toddler 411*** (Windsor Peak Press).

In response to the recent media attention given to vaccines, autism, and other controversies concerning vaccines, the Immunization Action Coalition (IAC) offers this **special excerpt from *Baby 411*** that answers these questions and more. IAC thanks Dr. Brown for this clearly written information, but mostly we are grateful for her continued advocacy for safe and effective vaccines.

It's time to jump right into a hot topic you'll find in parent circles – vaccines. Nothing seems to stir the blood these days more than a good ol' fashion debate on vaccinating your child. And after a record-breaking surge in measles cases in 2019, of which the vast majority of cases were unvaccinated children due to parental opposition to measles vaccination, the silent majority of parents who believe in vaccinations are far from silent.

A head's up: since there is so much misinformation out there on vaccines, you need to be armed with detailed, accurate information. And like the rest of this book, that is what you will get in this chapter. The information we provide is based on scientific evidence and solid peer-reviewed research. Remember our mantra: show us the science! Your child is too precious to make such important decisions on anything less. This chapter is not based on personal anecdotes, conspiracy theories, "research" done in people's basements (we are not kidding), or the crusades of B-list celebrities.

However, before we get to our take on this debate, let's go back in time a bit. Well, more than a bit. How did the human race survive when other early humans didn't? Yes, making tools and finding food most efficiently played a big role. But here's another key element: we built civilizations. And we developed a sense of responsibility – to ourselves and to our society. Every time we respond to a tragedy in our nation – whether it be 9/11, Hurricane Sandy, or the Boston Marathon bombing – we are reminded of how we are not just individuals living in our own little worlds. It's part of our civic duty to lend a hand and take care of our neighbors.

So, what's this pontificating have to do with vaccines? Again, it is our responsibility to work together as a community…this time, the subject isn't terrorism or storms, but something that can be just as terrifying: infectious diseases. Consider a bit of history: in the 1890s, people would have seven or eight children in their families and only half of them would survive childhood. Just go to an old graveyard sometime and look at the ages listed on the headstones. Many of the diseases that killed those children are now prevented by vaccination. It's a fact: vaccinations have increased the life expectancy of our nation's children. That's why our grandparents and parents embraced vaccines.

Here's a crucial point: the key to a vaccine's success is that everyone in the community gets vaccinated. Vaccines won't work if a large number of folks just choose to opt out of the system and their responsibility. Please keep this in mind as you read about vaccinations. Your decision (and every other parent's decision) affects your child. And society as a whole. Germs are rather simple creatures…they just look for a new person to infect. They don't play politics.

REALITY CHECK

The concept of "public health" has been around since antiquity. Obviously, rulers had a vested interest in keeping their subjects healthy so they had a society to rule. Through the years, governments have been responsible for managing numerous programs. The most important advances in public health have been vaccination programs, water purification, and waste disposal/sanitation systems. The only way for public health to work, though, is for all members of the community to follow the same rules.

Q Who came up with the idea of vaccinations in the first place?

It took centuries of observation as well as trial and error. (And sometimes, error meant death.) The first real step was describing the disease, in this case, smallpox. Smallpox was a deadly disease that, historically, wiped out entire civilizations. The earliest descriptions can be found as far back as the ninth and tenth centuries among Turks. In fact, "inoculation," or the infecting of a person with the disease in hopes of introducing a mild form and then creating immunity, was practiced first in Asia. In the 1700s an English aristocrat, Lady Mary Wortly Montagu, was living in Constantinople and learned of the practice of inoculation (known then as variolation). She had her son inoculated and subsequently, brought the practice back to England.

At about the same time, an English country doctor, Edward Jenner, made an interesting connection: milkmaids who had been exposed to cowpox (a common disease in cattle at the time) never seemed to get smallpox infections during epidemics. He began to study the idea that vaccinating humans with cowpox virus would make them immune to smallpox. In 1798 he published a paper on his idea and called it "Vaccination." Not to say, by the way, that Dr. Jenner's idea was accepted with completely open arms. In the nineteenth century there did emerge a group opposed to vaccination led by Mary C. Hume. See, even the anti-vaccination lobby has been around a long time! Of course, in those days, you could be prosecuted for refusing to vaccinate.[1]

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www.immunize.org/catg.d/p2068.pdf • Item #P2068 (8/19)

People were inoculated with a small amount of cowpox virus on their arm. It caused a localized infection at that site (hence, the scar that we forty-somethings and above bear). And true to Dr. Jenner's hypothesis, it provided protection against smallpox disease. In 1972, the United States stopped vaccinating against smallpox because it was no longer a threat to the population. In 1977, the last case of smallpox occurred in Somalia. In 1980, the World Health Organization declared the world free of smallpox, thanks to a global effort to immunize all children.

The success of the smallpox vaccine and other scientific discoveries led to the evolution of many vaccines. These new, safer vaccines are extremely effective in preventing diseases and epidemics that our grandparents and parents can still remember.

Q Why do you care whether I vaccinate my child or not?

For starters, I want your baby to be protected. But I also want you to realize that the decision to vaccinate your child impacts the health of other children in the community. Choosing NOT to vaccinate your child is choosing to put your child AND your community's children at risk. As a parent, you want to make the right choices for your child to protect them. I want you to ask questions. I want you to be informed. And I want you to get your child vaccinated. YOUR decision impacts ALL children. Why? There are two critical points for vaccination to work:

1. You need to be vaccinated.
2. Your neighbor needs to be vaccinated.

This concept is called herd immunity. And yes, you are a member of a herd. When 90–95% of "the herd" is protected, it is nearly impossible for a germ to cause an epidemic. Think of germs as rain. Vaccination is a raincoat. Even with a raincoat on, you can still get wet. You need an umbrella, too. The umbrella is "herd immunity." Those who don't vaccinate expect someone to share their umbrella when it rains. But society can only buy umbrellas TOGETHER. And raincoats aren't made for newborns – they need umbrellas!

As comedian Jon Stewart once put it, herd immunity is like a zombie movie. You are in an isolated farmhouse and the occupants rely on each other to board up their windows to keep the zombies (germs) out. The zombies get in when some lady from Marin County decides not to board up her windows because she read an article on a wellness blog about the potential health risks of boarding up windows. You can guess what happens!

Some parenting decisions have little or no impact on the community at large. Deciding whether or not your child eats organic baby food, goes to preschool, or sleeps in a family bed is entirely up to you – your decision only affects your child.

However, your decision whether or not to vaccinate your child affects all our kids. If you are a parent who is considering delaying or skipping vaccinations altogether, please realize the impact of your decision.

If more than 10% of American parents choose to "opt out" of vaccines, there's no question that our entire country will see these horrible diseases of bygone days return. Fortunately, very few parents decide to do this.

What is most concerning today is that there are pockets of under-vaccinated children. Birds of a feather flock together. Like-minded parents who don't vaccinate their kids tend to live in the same community and send their kids to the same schools. With lower immunization rates, there is no herd immunity. We have these "Ground Zero" areas to thank for recent measles and whooping cough outbreaks.[2]

REALITY CHECK

The Good News – While parents are asking more questions, they are still choosing to vaccinate their kids. The most recent Centers for Disease Control and Prevention (CDC) survey (2017) showed 98.9% of U.S. children aged 19 to 35 months had received 1 or more vaccinations. Yes, 98.9%. Despite all the media stories on vaccine "controversy," only a tiny fraction of parents – about 1% – are choosing to forgo vaccinations.

Some Common Vaccine Questions

Q What are vaccines?

Vaccines are materials that are given to a person to protect them from disease (that is, provide immunity). The word vaccine is derived from "vaccinia" (cowpox virus), which was used to create the first vaccine in history (smallpox). Modern medicine has created many vaccines. Vaccines PREVENT viral and bacteria infections that used to cause serious illness and death.

Q How do vaccines work?

Here is your microbiology lesson for today. Your immune system is your body's defense against foreign invaders (viruses, bacteria, parasites). Vaccines prepare your body to recognize foreigners without getting infected. A vaccine revs up your immune system to make antibodies (smart bombs with memory) for the signature of a particular germ. So, if your body sees the real germ, voila! You already know how to fight it off. There are three types of vaccinations: inactivated, live attenuated, and inactivated bacterial toxins.

- Inactivated vaccines do not contain any living germs. An immune response forms against either a dead germ, part of the germ (recombinant DNA), or a protein or sugar marker that sits on the outer layer of the germ (its signature). Very cool. These vaccines are safe to give to immune-compromised people. The only down side is that several doses of the vaccine are needed to provide full, life-long protection against disease. Some of these types of vaccines include: influenza, hepatitis A & B, *Haemophilus influenzae* type B (Hib), pertussis (whooping cough), inactivated polio, pneumococcal.
- Live attenuated vaccines are weak forms of the germs that cause infection. An immune response occurs just as if your body had the infection. So one or two doses of vaccine gives you lifelong protection. These vaccines are not given to immune-compromised people because they can make them sick. Examples include: measles, mumps, and rubella, oral polio, smallpox, tuberculosis, varicella (chickenpox), rotavirus.
- Toxoids (inactivated bacterial toxins) are vaccines that create a defense against the toxin (poison) that a bacteria germ makes. Examples of toxoid vaccines include diphtheria and tetanus.

Q What are the diseases we are protected against with vaccination?

Good question. You are probably unfamiliar with most of these diseases since we don't see them much anymore in the U.S. After you hear about the many successes we've had in eradicating disease with vaccination, thank your parents for immunizing you. As you read

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through the vaccination schedule, note that some diseases are viruses. Antibiotics kill bacteria only. Doctors have no medications to cure the viral infections. Doubt the effectiveness of vaccines? Just take a look at the sharp decline of illness and death rates from these diseases since 1950. Here is the link if you want to check it out: www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/E/reported-cases.pdf. Rather amazing, no? Diseases that used to kill thousands (if not hundreds of thousands) now only harm a handful of people – thanks to vaccines.

How are vaccines tested to make sure they're safe?

Vaccines are researched extensively for an average of 15 years before being approved for use. A pharmaceutical company conducts medical research trials in a series of stages. Once safety is proven, the vaccine is tested in several thousand volunteers to make sure the vaccine actually works. These volunteers are followed for at least one year to be sure that no serious side effects occur.

Nothing in this world is 100% foolproof, including vaccine science. But the research trials that occur before licensing are very rigid. If you think there are a lot of vaccines on the market, imagine how many didn't make it through the research phase of development.

The Food and Drug Administration (FDA) governs this whole process. The FDA is the watchdog for any medication that is sold over-the-counter or by prescription. There are extremely high standards that must be met before any product is allowed for human use.

After a vaccine is approved for use, long-term follow-up studies are done to assess for side effects, adverse reactions, and potency over a lifetime.

REALITY CHECK

Given the FDA's mixed track record, you may be skeptical about trusting the government when it comes to vaccine safety. But in truth, the system is in place to protect consumers. Although conspiracy theorists might disagree, the FDA really is on our side.

To improve drug and vaccine safety, the National Academy of Medicine (formerly Institute of Medicine) called for an overhaul of how the FDA works – in the future, the FDA will do more ongoing safety reviews of medicines and make all clinical study results public. This should help boost public confidence in the FDA and vaccine safety.

Why is my child getting more shots than I did?

Simple answer: we've been successful inventing vaccines to fight more diseases. It's one of the important advances in modern medicine – vaccines prevent disease, injury, and death. More vaccines are a good thing!

An important point: many of the vaccine-preventable diseases are viruses. These viral infections cannot be treated with medicine once an infection occurs (for example, Hepatitis B).

Vaccines that protect against bacterial diseases are often serious ones, and resistant to many antibiotics (for example, Prevnar).

And even though the number of shots has gone up, the total load on the immune system has gone down. Today's vaccines are smarter and better engineered than the shots from a few decades ago. In fact, the total number of immunologic agents in the entire childhood vaccination series today is less than what was in just two vaccines in 1980!

Our children are getting smarter, safer vaccines today and better protection than we ever got as kids.

Are we giving too many shots, too soon?

This is a false mantra of the anti-vaccine crowd: they say babies are receiving too many shots (compared to say, 1980) and too soon (infants can't handle all these shots, they say).

So, let's look at this scientifically. On any given day, your baby is exposed to literally thousands of germs (it doesn't matter how spotless your house is). Exposing your child to five to eight different germs in the form of vaccines is a spit in the bucket.

Young children have better immune responses to vaccines than adults and older children. So they will form adequate immune responses to various vaccines simultaneously. (This is studied extensively before a vaccine is licensed.) Even if your baby got 11 shots at the same time, he would only need to use about 0.1% of his immune system to respond to them.[3]

Giving several vaccines at once does not damage, weaken, or overload the immune system. Vaccines boost the immune system. Also, the diseases that the vaccines protect against are the most severe in infants and young children. Your doctor wants to get those vaccinations in as safely and effectively as possible. That's why the timing is so important (and why a staggered or delayed vaccination schedule is a bad idea – more on that in the controversies section of this handout).

Can't you just give one big shot that has all the vaccines in it?

Medical science is working on it!

There have been a few combination vaccines licensed for use. The largest combination vaccines are Pediarix (DTaP, IPV, Hepatitis B) and Pentacel (DTaP, IPV, Hib). The reason there isn't just one big shot is that some vaccines are ineffective when they are sitting together in a solution. Your baby may still need more than one shot, but if your doctor uses a combo vaccine, at least it will be fewer shots than if they are all administered separately.

More combination vaccines are on the horizon.

What groups make decisions about vaccinations for children?

There are four governing panels of experts in infectious diseases that make recommendations for vaccinations. These smart folks include: American Academy of Pediatrics (AAP), American Academy of Family Physicians (AAFP), Advisory Committee on Immunization Practices (ACIP), and the Centers for Disease Control and Prevention (CDC). Because there are several groups involved in this effort, there is some variability in vaccination schedule recommendations.

My baby has a cold. Should I hold off on vaccinations?

No! This is a common misconception of parents. Even if your baby has a minor illness, he can still get his shots. We cannot stress how important it is to get your child vaccinated in a timely manner. So don't let a sniffle or two make you reschedule an office visit for shots. Your child can also get his shots even if he is on antibiotics.

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Q Can I choose not to vaccinate my child?

Yes, but we wouldn't advise it. Choosing not to vaccinate is not a risk-free choice. It's choosing to expose your child to potentially serious infection. It's also choosing to expose other children in your community to serious, preventable diseases. And if you think your child will be safe because everyone else vaccinates his or her kids, you'd be wrong (and very selfish, we might add). You can also choose not to stop at a stop sign, but we wouldn't advise it!

REALITY CHECK

Vaccine requirements for school entry vary by state. There is no one consistent policy. As of mid-2019, all 50 states allow vaccine exemptions for medical reasons, 45 states allow exemptions for religious reasons, and 17 states allow exemptions for philosophical reasons.[4] After the 2019 measles outbreaks, several state legislatures reconsidered their existing laws for vaccine exemptions. Limiting the exemptions improves vaccination rates and thus protects more children.

Q I've heard that getting a disease provides immunity forever and vaccinations might not provide lifelong protection. Wouldn't it be better to get the disease? Isn't that a more "natural" way of creating immunity?

No. The diseases we prevent by vaccination are not minor illnesses (this includes chickenpox). For instance, would you rather have your child get meningitis and die or get the vaccine? Getting chickenpox or any other disease the "natural way" is a much greater health risk without any significant benefit. And just think of the discomfort, pain and perhaps serious injury that come with getting any of these diseases.

It is true that some vaccinations require a booster dose to keep antibody levels high. That is why we need a tetanus booster every ten years.

Q What would happen if we stopped using vaccinations?

That's an easy one. The diseases would come back.

Vaccinations keep us from getting sick from these infections. But all of the infections we protect against are alive and well in our world. As of today, the only disease we have completely eliminated is smallpox. And when it was eliminated, we stopped vaccinating for it.

Anyway, it's a simple fact: when immunization rates drop, epidemics occur. Just look at states with lower immunization rates – their rates of pertussis (whooping cough) are twice the number seen in states with higher percentages of immunization rates. Children whose parents opt out of vaccines face a 23 times greater risk of getting whooping cough.[5] In the 2019 measles outbreak, most cases occurred in communities with dangerously low measles immunization rates.

REALITY CHECK

In 1990, low immunization rates led to a measles epidemic of 55,000 cases and over 100 preventable deaths in the U.S. The U.S. saw a measles epidemic again in 2008 – over 90% of these cases were unvaccinated children, two-thirds of which were by parental choice. But a few of the cases were infants who were too young to be vaccinated (and exposed to an infected child in the doctor's waiting room). You would think we would have learned our lesson, but 2019 was another banner year for measles, with more cases than in the previous 30+ years. This serves as a reminder that vaccine-preventable diseases have not disappeared.

Q What are the typical side effects of vaccination?

Fever, fussiness, redness, or lump at the site of the injection.

Inactivated vaccines cause an immediate immune response. The body mounts a response to the foreign invader as if it were being infected. The result, typically, is a fever within 24 hours of vaccination. Babies sometimes feel like they are coming down with a cold or flu (body aches, pains). Some babies prefer to sleep through the experience; some choose to tell you how they feel (fussiness, crying). All of these symptoms resolve within 24 to 48 hours of vaccination.

Live attenuated vaccines (MMR, Varicella) cause a delayed immune response. This occurs one to four weeks after the vaccination is given. Long after the doctor's visit, your child may wake up one morning and have a fever.

This may be accompanied by a rash that looks like measles (pimples) or chickenpox (clear, fluid-filled pimples). The rash can sometimes be dramatic. Both the fever and the rash tell you that your baby is forming an immune response to the vaccination. Babies are not contagious and aren't too bothered by the rash. You don't need to call your doctor. This reaction is expected.

Redness at the injection site is common. In particular, the fifth booster dose of the DTaP (at age five years) can cause a pretty dramatic area of redness. No worries. We do get quite a few phone calls about it, though!

A firm lump may develop at the injection site if some of the fat in the arm/leg gets nicked as the needle goes into the muscle. This is called fat necrosis. It usually goes away within six to eight weeks. It doesn't hurt.

Red flag! If your baby has a fever more than 72 hours after being vaccinated, it's not from the vaccination. You need to call your doctor. The only exceptions are the MMR and chickenpox vaccines, which typically cause a fever one to four weeks afterwards.

REALITY CHECK

To help reduce fever and discomfort from shots, it's okay to give your baby acetaminophen (Tylenol) as long as you wait at least four hours after vaccinations are given. The dose is not listed on the package. It says to "consult a doctor." That's because doctors don't want you giving this medicine to a baby three months or younger with a fever without checking in first. Other than with shots, you need to call your doctor about fevers in this age group.

Q What are the worst reactions to vaccination?

These are called adverse reactions. This is the equivalent of an allergic reaction to a medication – and fortunately, they are all quite rare. With each generation of newer vaccinations, the risk of serious reactions is almost eliminated.

Adverse reactions include:
1. Death.
2. Anaphylactic reaction.
3. Encephalitis.
4. Fever-related seizure (convulsions).

Both the CDC and FDA keep close tabs on adverse reactions to vaccines via a Vaccine Adverse Event Reporting System (VAERS). Both doctors and patient families may submit a VAERS form if any adverse reaction occurs.

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Keep in mind that medical illness reports do not prove an association of a particular illness with a specific vaccination. The job of both the CDC and FDA is to review each report that occurs and see if there is a pattern of subsequent illness after vaccination. VAERS data is publicly available at vaers.hhs.gov. To report a possible reaction, you can download a form at the same site. There is also a Clinical Immunization Safety Assessment Project comprised of six U.S. academic medical centers that evaluates adverse reactions to vaccines.

While we would be remiss if we didn't tell you that vaccinations have some risks associated with them, we want you to remember that the risk of adverse reaction is significantly lower than leaving your baby unprotected. Serious side effects, such as a severe allergic reaction, are known to occur, although very rarely.[6] It is estimated that, for every 1 million doses of vaccine, 1 to 2 people will have a severe allergic reaction. That is why you need to watch your child carefully for a few days after their shots and, if you see something that concerns you, call your doctor right away.

We agree that a serious adverse reaction only has to happen to one child for it to be heartbreaking. But if we look at the big picture, we can point to the millions of children who might have experienced illness, chronic disability, and death if diseases like smallpox or polio were not controlled by vaccinations.

Q Are there any reasons I should not vaccinate my child?

There are several very specific medical reasons to discontinue or hold off on certain vaccinations. These include:

1. Patient or family member is immune-compromised.
2. Patient had disease (for example, if you've had chickenpox, you don't need the vaccine).
3. Patient has encephalitis or degenerative brain disorder.
4. Patient has allergy to vaccine or to an additive in the vaccine.

If your baby has a food allergy to eggs or gelatin, or an allergy to antibiotics (such as neomycin, streptomycin, polymyxin B), notify your doctor before any vaccinations are given. Several vaccines are grown in chick embryo cells and therefore contain a small amount of egg protein: flu vaccine, MMR, rabies, and yellow fever vaccine. The MMR vaccine also includes gelatin.

Rabies, MMR, chickenpox, and polio vaccines include several different kinds of antibiotics to prevent contamination of the vaccine itself. Check with your doctor if your child is allergic to any antibiotics.

While there is a scant amount of egg protein in the MMR vaccine, it is still safe to give to a person with an egg allergy in your pediatrician's office. And, although the flu vaccine contains trace amounts of egg protein, beginning with the 2016–17 vaccination season, it is recommended that patients with an egg allergy of any severity can safely be vaccinated with any influenza vaccine product.

Q Who keeps a record of my child's vaccinations?

You and your doctor. Your doctor keeps a record of vaccinations in your child's records. All states but one have an immunization registry that also keeps records of vaccinations.

But ultimately, YOU need to have a copy of these in your personal medical record file. You will need proof of vaccinations for many things. Any childcare or school program requires this information. Summer camps and athletic programs want the records, too. If your child becomes a healthcare professional, joins the military, or is a food handler, he will also need this information.

▶ HELPFUL HINT

It's a good idea to have a medical passport for your child. This should include an immunization record, growth chart, list of medical problems, list of surgeries, drug allergies, and name and dosage of any medications that are used regularly (such as asthma medicine). Some medical practices now offer a patient portal that allows you to keep track of your own records. If so, we encourage you to take advantage of it!

Q How do I know when my child needs booster shots?

Your doctor will remind you at each well child visit. We wish pediatricians were more like dentists or veterinarians, who long ago figured out how to send out reminders of needed visits. Sadly, only a minority of pediatric practices have electronic reminder or recall systems. Most do not usually send out reminders to let you know your child is due for shots. What most practices do is provide the schedule in an information packet at your child's first visit. Your doctor will tell you at each well check when to return. This system works pretty well unless you start missing well-child visits. Then your child gets behind on his vaccination series. You can try to catch your child up on shots when he is in for a sick visit if this happens.

■ REALITY CHECK

Wanted: A National Immunization Registry – There is no uniform system of tracking immunization status and sending reminder cards to patients' families. One solution: a national immunization registry. Advocates of this plan feel it will improve our country's immunization rates. Those opposed to the plan think it invades personal privacy and creates a government health care tracking system. So, like most governmental decisions, it may take years to resolve.

Q What vaccines are required and which ones are optional?

The answer varies state to state. It also varies depending on the frequency of disease in particular counties within a state. A table of the most recent requirements in the U.S. can be found at www.immunize.org/laws.

Q Can I take my baby out before she gets her first set of shots?

Yes, just be smart about it. Pediatricians usually recommend limiting human contact with babies under four weeks of life. Why? Because if your newborn gets any fever (of 100.4° or greater), that is an automatic ticket to the hospital for two days. Even if your baby has the cold that the rest of the household has, we still need to rule out a serious infection.

That said, you aren't quarantined, but use discretion when planning your outings. In cold and flu season, avoid crowded places for the first three months of life.

With respect to an unvaccinated baby, the biggest threat these days is whooping cough. Whooping cough is spread by cough and sneeze

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droplets of an infected person. Babies get a series of four shots over the first two years of life to protect them from whooping cough. To keep everyone inside that long is crazy! But being cautious until she gets her first shot at two months isn't a bad idea.

Q I have a friend who does not vaccinate her child. Is it okay for our babies to play together?

Awkward, right? Well, the most politically correct thing to do would be cancel a playdate when either child is ill. This is not a foolproof solution, however. A person with measles, for instance, is contagious for three to four days before the rash erupts.

If you want to make a statement (and potentially lose the friendship), be honest and explain to her that you feel uncomfortable with your kids being together – it may give her pause to consider her choices.

Controversies

Let's face it, controversy drives TV ratings and web traffic. No one is interested in hearing about things that work as they should – and vaccines are a good example. Vaccines have been a hot topic for the last decade or so. Unfortunately, rare adverse events and theoretical concerns tend to make more headlines than the remarkable success story of vaccinations. These problems are then seized on by vaccine opponents and spread online through the web like a, well, virus.

So, let's address this head on. Here are the controversies you might hear about with vaccines:

Q I've heard that the MMR vaccine might cause autism. Is this true?

No. Parents also hear that vaccinations cause multiple sclerosis, diabetes, asthma, and SIDS. None of these are caused by vaccination. The government operates a safety monitoring system (VAERS, FDA, CDC) – watching for any possible adverse effects from vaccines. No one wants to increase autism rates.

One small case report of only eight patients in 1998 led a research group to feel that the combination MMR vaccine might cause autism.[7] But don't try to find the article online because the journal that published the article later retracted it when a former member of the research lab revealed that the data reported in the study was fabricated! Twelve years later, the lead author lost his license to practice medicine in England and was accused of fraud. The whole thing was a hoax.

Before this came to light, several reputable scientists tried to replicate the findings of this now discredited researcher. No one ever could – and now we know why!

Unfortunately, frightened parents chose to skip the MMR vaccine and measles epidemics occurred both in England and the U.S. as a result of these unfounded claims.

Bottom line: Don't base health decisions for your child on one research study or what the media reports! Talk to your child's doctor about any vaccine safety concerns.

Q If the MMR vaccine doesn't cause autism, why is the diagnosis made around the same time as the vaccination?

One of the criteria used to make a diagnosis of autism is a language delay. Because children do not have significant expressive language under a year of age, doctors have to wait until 15 to 18 months to confirm a language delay and make the diagnosis. That's about the same time as the MMR vaccination, which leads some parents to wonder about autism and vaccination.

Q I've heard there is mercury preservative in the vaccines. Is this true?

Not anymore. It was removed from all required childhood vaccines by 2001. This deserves repeating: YOUR baby will not be getting required vaccines that contain mercury (thimerosal) as a preservative.

Despite the fact that vaccines have been mercury preservative-free for over a decade now, speculation persists about vaccines previously containing mercury and links to autism. This speculation continues even after the Institute of Medicine (IOM), now known as the National Academy of Medicine, published a conclusive report in 2004 negating any association between vaccines and autism.[8] (The IOM spent four years studying both the mercury question and the MMR combo vaccine question and published a series of eight reports on the subject.)

Bottom line: Thimerosal will remain on blogs and anti-vaccine websites forever, but the preservative does not remain in any of the required childhood vaccines that YOUR baby will get.

Because of some remaining concerns, the next two Q&As should provide you with more than you ever wanted to know about thimerosal.

Q I heard that I should still ask my doctor if the vaccines for my baby are thimerosal-free. What do you suggest?

We think you should ask as many questions as you need to feel comfortable. Remember that since 2001, the entire childhood vaccine series went thimerosal (mercury) preservative-free. If your doctor has a 2001 vintage vaccine vial sitting on the shelf (which would be long expired by now), I'd have bigger concerns about your doc than his vaccine supply.

Here is the specific rule regarding thimerosal use in vaccines: the FDA requires manufacturers of routine childhood immunizations to no longer use thimerosal as a preservative. This rule does NOT apply to flu vaccine because (technically) this vaccination is optional (except in New Jersey) and not "routine."

Why does flu vaccine need thimerosal or any other preservative? First, understand the flu vaccine is reformulated every year to reflect the anticipated flu strains. Since millions of doses of flu vaccine are needed every year, the most efficient way to produce the shot is in multi-dose vials, which require a preservative.

Hence, some flu shots (not the flu nasal spray) contain the preservative thimerosal. However, there are single-dose preparations of flu vaccine that are mercury preservative-free. These can be given to young children and pregnant women. Ask your doctor for a thimerosal-free flu vaccine if you are concerned.

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What about other vaccines? Do they contain thimerosal? There are two vaccines that use thimerosal in the production process – but neither of these vaccines is used in babies. The thimerosal is extracted before the final product is bottled. As such, these vaccines must list that TRACE amounts of thimerosal (less than 0.003mg) may exist in the vaccine. There is probably little or no thimerosal in the finished product, but the manufacturer must declare it. FYI: many vaccines such as the combination measles, mumps, and rubella vaccine (MMR) never used thimerosal in the production process or as a preservative.

If you want to learn more about thimerosal and vaccines, go to www.fda.gov/vaccines-blood-biologics/safety-availability-biologics/thimerosal-and-vaccines.

Q Does thimerosal cause autism?

No. The National Academy of Medicine (formerly Institute of Medicine) reached this conclusion in 2004. What proof do we have?

Thimerosal has been removed from vaccines since 2001, but the rates of autism are still skyrocketing. A 2008 survey of autism rates in California confirms that mercury is essentially out of vaccines and autism rates are still going up. If thimerosal was the cause and it was removed from vaccines seven years ago, autism rates would be going down by now. Why? Because autism spectrum disorders are usually diagnosed by three years of age. By now, any reduction in autism should have been obvious if thimerosal caused the disorder.[9]

Q Are there other additives in the vaccines?

Yes. And you should know about them.

As we have already discussed, vaccines contain the active ingredients that provide immunity. But there are inactive ingredients that improve potency and prevent contamination. Below is a list of additives and why they are there. These products are present in trace amounts and none have been proven harmful in animals or humans.[10]

- *Preservatives:* Prevent vaccine contamination with germs (bacteria, fungus). Example: 2-phenoxyethanol, phenol, (thimerosal, prior to 2001).
- *Adjuvants:* Improve potency/immune response. Example: aluminum salts.
- *Additives:* Prevent vaccine deterioration and sticking to the side of the vial. Examples: gelatin, albumin, sucrose, lactose, MSG, glycine.
- *Residuals:* Remains of vaccine production process. Examples: formaldehyde, antibiotics (neomycin), egg protein, yeast protein.

See our website (Baby411.com, click on "Bonus Material") for a list of ingredients for the routine childhood vaccination series.

REALITY CHECK

If vaccines contain ingredients like aluminum or formaldehyde, wouldn't it be better if vaccine makers got rid of these additives?

Shouldn't vaccines be "greener"?

This is a red herring argument against vaccines – current vaccines are safe, even with tiny/trace amounts of preservatives or additives like aluminum.

And your baby is exposed to many of these ingredients every day… simply by eating or breathing.

Q Why is formaldehyde in vaccines?

Small amounts of formaldehyde are used to sterilize the vaccine fluid so your child doesn't get something like flesh-eating strep bacteria when he gets his shots.

We know when you think of formaldehyde, that ever-present smell wafting from the anatomy lab in high school comes to mind. But what you probably don't know is that formaldehyde is also a naturally occurring substance in your body. And if you use baby shampoo, paper towels, or mascara, or have carpeting in your home, you've been exposed to formaldehyde. The small amount used in vaccines is not a health concern.

Q Is it true that anti-freeze is used in vaccines?

No. There is a chemical used in some vaccines (called polyethylene glycol) that is also found in antifreeze, as well as toothpaste, lubricant eyedrops, and various skin care creams. Polyethylene glycol is used in the production process to purify vaccines.

Q Is it safer to delay vaccines or use an alternative vaccination schedule?

Easy answer: no. The CDC publishes a recommended vaccine schedule for American children. Many, many doctors, scientists, and researchers work together with the CDC to decide what is the best timing to give shots. The goal: protect babies as soon as it is safe and effective to do so. This schedule was not created out of thin air.

Between anti-vaccine activists shouting "too many shots, too soon" and Dr. Bob Sears hawking his book, new parents wonder if it would somehow be safer to wait on shots altogether or stagger them out on "Dr. Bob's schedule."

Here's a nasty little truth about alternative vaccination schedules: they are all fantasy. There is absolutely no research that says delaying certain shots is safer. Dr. Bob is making up "Dr. Bob's Schedule" all by himself. He even admits that. In an interview with iVillage, he commented, "My schedule doesn't have any research behind it. No one has ever studied a big group of kids using my schedule to determine if it's safe or if it has any benefits."

A 2010 study actually did study children whose vaccinations were delayed and found there was absolutely no difference in their development to children who'd received their shots on time (Smith). A 2013 study showed further evidence that giving numerous shots at the same time and giving the recommended vaccination schedule has no impact on a child's risk of autism.[11]

I'd much rather follow a schedule that has been extensively researched for both safety and effectiveness by experts in the field of infectious diseases.

What we do know about alternative vaccination schedules is that delaying shots is playing Russian Roulette with your child. The simple truth is that you are leaving your child unprotected, at a time when she is the most vulnerable.

We realize that parents who choose to delay or opt out on vaccines are not bad parents. They are scared parents. What we are trying to help you realize is that the fear you should have is for the diseases that vaccines prevent.

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Q If I want to do a staggered vaccination schedule, how should I do it?

I suggest setting up a consultation with your own pediatrician to discuss what both of you feel comfortable with doing. Remember, the ultimate goal is to have your child vaccinated in a timely manner.

With the 2019 measles outbreaks on everyone's minds, more pediatricians are increasingly adamant about protecting their littlest patients. Many refuse to deviate from the recommended schedule just to appease a nervous parent. It may be difficult to find a board-certified pediatrician willing to modify or delay shots. It's our job to protect kids. Following the recommended schedule is the best way to do that.

Q How do I know that the CDC and FDA are on "our" side?

Ah, the government conspiracy theory – the belief by some that the government is part of a vast conspiracy to hurt children with bad vaccines…and enrich pharmaceutical makers who make vaccines.

Yes, years ago, some members of vaccine advisory committees had ties with vaccine producers. These people were invited to the table because they brought a wealth of knowledge with them (example: vaccine research scientists).

Today, no one working for the vaccine watchdogs (CDC, FDA, AAP, ACIP, or AAFP) receives any grant or research money from pharmaceutical companies. So there is no real or perceived financial incentive to allow a bad vaccine to stay on the market. If there is concern about a vaccine, it will be pulled from the market immediately.

To further ensure unbiased recommendations, the National Immunization Program (NIP) and the Vaccine Injury Compensation Program (VICP) parted ways in 2005 so there would be no perceived "conflict of interest."

Here is another consideration: why would these groups want our nation's children to suffer chronic illness, pain, or even death? Think about it. It is in nobody's interest to increase infant morbidity and mortality rates.

▶ HELPFUL HINTS – Where to get more information

Our advice: don't type in "vaccinations" in a Google search. You will end up with inaccurate information from concerned groups who do a great job of creating parental anxiety. The following sites will provide accurate information:

- Centers for Disease Control and Prevention: www.cdc.gov/vaccines/parents, (800) CDC-INFO or (800) 232-4636
- American Academy of Pediatrics: www.aap.org/immunization, (800) 433-9016
- Immunization Action Coalition at www.immunize.org and www.vaccineinformation.org
- Vaccine Education Center, Children's Hospital of Philadelphia www.vaccine.chop.edu

Here is an excellent reference book written for parents: *Vaccines and Your Child. Separating Fact from Fiction*. Offit, P. and Moser C. New York: Columbia University Press. 2011.

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Measles: Questions and Answers

INFORMATION ABOUT THE DISEASE AND VACCINES

What causes measles?

Measles is caused by a virus.

How does measles spread?

Measles is spread from person to person through the air by infectious droplets; it is highly contagious.

How long does it take to show signs of measles after being exposed?

It takes an average of 10–12 days from exposure to the first symptom, which is usually fever. The measles rash doesn't usually appear until approximately 14 days after exposure, 2–3 days after the fever begins.

What are the symptoms of measles?

Symptoms include fever, runny nose, cough, loss of appetite, "pink eye," and a rash. The rash usually lasts 5–6 days and begins at the hairline, moves to the face and upper neck, and proceeds down the body.

How serious is measles?

Measles can be a serious disease, with 30% of reported cases experiencing one or more complications. Death from measles occurs in 2 to 3 per 1,000 reported cases in the United States. Complications from measles are more common among very young children (younger than five years) and adults (older than 20 years).

What are possible complications from measles?

Diarrhea is the most common complication of measles (occurring in 8% of cases), especially in young children. Ear infections occur in 7% of reported cases. Pneumonia, occurring in 6% of reported cases, accounts for 60% of measles-related deaths. Approximately one out of one thousand cases will develop acute encephalitis, an inflammation of the brain. This serious complication can lead to permanent brain damage.

Measles during pregnancy increases the risk of premature labor, miscarriage, and low-birth-weight infants, although birth defects have not been linked to measles exposure.

Measles can be especially severe in persons with compromised immune systems. Measles is more severe in malnourished children, particularly those with vitamin A deficiency. In developing countries, the fatality rate may be as high as 25%.

How is measles diagnosed?

Measles is diagnosed by a combination of the patient's symptoms and by laboratory tests.

Is there a treatment for measles?

There is no specific treatment for measles. People with measles need bed rest, fluids, and control of fever. Patients with complications may need treatment specific to their problem.

How long is a person with measles contagious?

Measles is highly contagious and can be transmitted from four days before the rash becomes visible to four days after the rash appears.

What should be done if someone is exposed to measles?

Notification of the exposure should be communicated to a doctor. If the person has not been vaccinated, measles vaccine may prevent disease if given within 72 hours of exposure. Immune globulin (a blood product containing antibodies to the measles virus) may prevent or lessen the severity of measles if given within six days of exposure.

How common is measles in the United States?

Before the vaccine was licensed in 1963, there were an estimated 3–4 million cases each year. In the years following 1963, the number of measles cases dropped dramatically with only 1,497 cases in 1983, the lowest annual total reported up to that time. By 2004, only 37 cases were reported – a record low. However, new cases continued to be reported, primarily in populations that have refused vaccination for religious or personal belief reasons. From 2001 through 2011, an average of 63 measles cases (range, 37 to 220) and four outbreaks were reported each

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www.immunize.org/catg.d/p4209.pdf • Item #P4209 (11/18)

year in the United States. Of the 911 cases, a total of 372 (41%) were imported from outside the U.S. and an additional 432 (47%) were associated with importations. Hospitalization was reported for 225 (25%) cases. Two deaths were reported. Most cases occur among people who declined vaccination because of a religious, or personal objection.

The U.S. experienced a record number of measles cases during 2014, with 644 cases reported from 27 states. This is the greatest number of cases since measles elimination was documented in the U.S. in 2000. In 2015, the U.S. experienced a large, multi-state outbreak of measles linked to an amusement park; for up-to-date case counts and outbreak information, visit CDC's Measles Cases and Outbreaks web page at www.cdc.gov/measles/cases-outbreaks.html.

Can someone get measles more than once?

No.

When did vaccines for measles, mumps, and rubella become available?

The first measles vaccines (an inactivated and a live virus product) became available in 1963, both of which were largely replaced by a further attenuated live virus vaccine that was licensed in 1968. The mumps vaccine first became available in 1967, followed by the rubella vaccine in 1969. These three vaccines were combined in 1971 to form the measles-mumps-rubella (MMR) vaccine. A vaccine that combines both MMR and varicella (chickenpox) vaccines, known as MMRV, became available in 2005. Single antigen measles, mumps, and rubella vaccines are no longer available in the U.S.

What kind of vaccine is it?

MMR vaccine contains live, attenuated (or weakened) strains of the measles, mumps, and rubella viruses.

How is this vaccine given?

This vaccine is a shot given subcutaneously (in the fatty layer of tissue under the skin).

Who should get this vaccine?

All children, adolescents, and adults born in 1957 or later without a valid contraindication should have documentation of vaccination or other evidence of immunity. Additionally, some healthcare personnel who were born before 1957 may also need proof of vaccination or other evidence of immunity.

What kind of "evidence of immunity" can substitute for MMR vaccination?

Evidence of immunity can be shown by having laboratory evidence of immunity to measles, mumps, and/or rubella or laboratory confirmation of disease. However, if a person doesn't have evidence of immunity to all three diseases (e.g., measles, mumps, and rubella), they would still need to get vaccinated with MMR since the vaccine is not available as a single antigen product in the U.S.

At what age should the first dose of MMR be given?

The first dose of MMR should be given on or after the child's first birthday; the recommended age range is from 12–15 months. A dose given before 12 months of age will not be counted, so the child's medical appointment should be scheduled with this in mind.

When should children get the second MMR shot?

The second dose is usually given when the child is 4–6 years old, or before he or she enters kindergarten or first grade. However, the second dose can be given earlier as long as there has been an interval of at least 28 days since the first dose.

How effective is this vaccine?

The first dose of MMR produces immunity to measles and rubella in 90% to 95% of recipients. The second dose of MMR is intended to produce immunity in those who did not respond to the first dose, but a very small percentage of people may not be protected even after a second dose.

Which adolescents and adults should receive the MMR vaccine?

All unvaccinated adolescents without a valid contraindication to the vaccine should have documentation of two doses of MMR. All adults born in or after 1957 should also have documentation of vaccination or other evidence of immunity.

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Adults born before 1957 are likely to have had measles and/or mumps disease as a child and are generally (but not always) considered not to need vaccination.

Which adults need two doses of MMR vaccine?

Certain adults are at higher risk of exposure to measles, mumps, and/or rubella and may need a second dose of MMR unless they have other evidence of immunity; this includes adults who are:

- students in postsecondary educational institutions (for measles and mumps)
- healthcare personnel (for measles and mumps)
- living in a community experiencing an outbreak or recently exposed to the disease (for measles and mumps)
- planning to travel internationally (for measles and mumps)
- people who received inactivated (killed) measles vaccine or measles vaccine of unknown type during 1963–1967 should be revaccinated with two doses of MMR vaccine.
- people vaccinated before 1979 with either killed mumps vaccine or mumps vaccine of unknown type who are at high risk for mumps infection (e.g., persons who are working in a healthcare facility) should be considered for revaccination with 2 doses of MMR vaccine.

Why do healthcare personnel need vaccination or other evidence of immunity to measles, mumps, and rubella?

People who work in medical facilities are at much higher risk for being exposed to disease than is the general population. Making sure that all employees are immune to these diseases protects both the employee and the patients with whom he or she may have contact. All people working in a healthcare facility in any capacity should have documentation of vaccination or evidence of immunity, including full- or part-time employees, medical or non-medical, paid or volunteer, students, and those with or without direct patient responsibilities.

Facilities should consider vaccinating with MMR vaccine healthcare personnel born before 1957 who lack laboratory evidence of measles, mumps, and rubella immunity or laboratory confirmation of previous disease. These facilities should vaccinate healthcare personnel with MMR during an outbreak of any of the diseases, regardless of birth year.

Who recommends this vaccine?

The Centers for Disease Control and Prevention (CDC), the American Academy of Pediatrics (AAP), the American Academy of Family Physicians (AAFP), the American College of Obstetricians and Gynecologists, and the American College of Physicians (ACP) have all recommended this vaccine.

How safe is this vaccine?

Hundreds of millions of doses of measles, mumps, and rubella vaccine prepared either as separate vaccines or as the combined MMR have been given in the United States, and its safety record is excellent.

What side effects have been reported with this vaccine?

Fever is the most common side effect, occurring in 5%–15% of vaccine recipients. About 5% of people develop a mild rash. When they occur, fever and rash usually appear 7–12 days after vaccination. About 25% of adult women receiving MMR vaccine develop temporary joint pain, a symptom related to the rubella component of the combined vaccine. Joint pain only occurs in women who are not immune to rubella at the time of vaccination. MMR vaccine may cause thrombocytopenia (low platelet count) at the rate of about 1 case per 30,000–40,000 vaccinated people. Cases are almost always temporary and not life-threatening. More severe reactions, including allergic reactions, are rare. Other severe problems (e.g., deafness, permanent brain damage) occur so rarely that experts cannot be sure whether they are caused by the vaccine or not.

If a child develops a rash after getting the MMR vaccine, is he contagious?

Transmission of the vaccine viruses does not occur from a vaccinated person, including those who develop a rash. No special precautions (e.g., exclusion from school or work) need be taken.

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Who should NOT receive MMR vaccine?

Anyone who had a severe allergic reaction (e.g., generalized hives, swelling of the lips, tongue, or throat, difficulty breathing) following the first dose of MMR should not receive a second dose. Anyone knowing they are allergic to an MMR component (e.g., gelatin, neomycin) should not receive this vaccine.

As with all live virus vaccines, women known to be pregnant should not receive the MMR vaccine, and pregnancy should be avoided for four weeks following vaccination with MMR. Children and other household contacts of pregnant women should be vaccinated according to the recommended schedule. Women who are breast-feeding can be vaccinated.

Severely immunocompromised people should not be given MMR vaccine. This includes people with conditions such as congenital immunodeficiency, AIDS, leukemia, lymphoma, generalized malignancy, and those receiving treatment for cancer with drugs, radiation, or large doses of corticosteroids. Household contacts of immunocompromised people should be vaccinated according to the recommended schedule.

Although people with AIDS or HIV infection with signs of serious immunosuppression should not be given MMR, people with HIV infection who do not have laboratory evidence of severe immunosuppression can and should be vaccinated against measles.

Can individuals with egg allergy receive MMR vaccine?

In the past it was believed that people who were allergic to eggs would be at risk of an allergic reaction from the vaccine because the vaccine is grown in tissue from chick embryos. However, recent studies have shown that this is not the case. MMR may be given to egg-allergic individuals without prior testing or use of special precautions.

Does the MMR vaccine cause autism?

There is no scientific evidence that measles, MMR, or any other vaccine causes autism. The question about a possible link between MMR vaccine and autism has been extensively reviewed by independent groups of experts in the U.S. including the National Academy of Sciences' Institute of Medicine. These reviews have concluded that there is no association between MMR vaccine and autism.

For a summary of the issues on this topic, please read "Do Vaccines Cause Autism?" on the website of the Vaccine Education Center at Children's Hospital of Philadelphia. This discussion can be accessed at www.chop.edu/centers-programs/vaccine-education-center/vaccines-and-other-conditions/vaccines-autism.html

Dr. Ari Brown has written a good piece for parents questioning the safety of vaccines. To access "Clear Answers & Smart Advice about Your Baby's Shots," go to: www.immunize.org/catg.d/p2068.pdf.

For more information, visit CDC's web page about vaccines and autism at www.cdc.gov/vaccinesafety/concerns/autism/index.html

Can the live virus in the vaccine cause measles, mumps, and/or rubella?

Because the measles, mumps, and rubella viruses in the MMR vaccine are weak versions of the disease viruses, they may cause a very mild case of the disease they were designed to prevent; however, it is usually much milder than the natural disease and is referred to as an adverse reaction to the vaccine.

What if a pregnant woman inadvertently got the MMR vaccine?

Women are advised not to receive any live virus vaccine during pregnancy as a safety precaution based on the theoretical possibility of a live vaccine causing disease (e.g., rubella virus leading to congenital rubella syndrome [CRS]).

Because a number of women have inadvertently received this vaccine while pregnant or soon before conception, the Centers for Disease Control and Prevention has collected data about the outcomes of their births. From 1971–1989, no evidence of CRS occurred in the 324 infants born to 321 women who received rubella vaccine while pregnant and continued pregnancy to term. As any risk to the fetus from rubella vaccine appears to be extremely low or zero, individual counseling of women in this situation is recommended, rather than routine termination of pregnancy.

Flu Vaccine for Preteens and Teens

A yearly flu vaccine is the best way to protect your child from flu and its potentially serious complications.

Why should my child get a flu vaccine?

- Reduces the risk of flu illness
- Reduces the risk of hospitalization from flu
- Can be life-saving in children
- May reduce illness severity among people who get vaccinated but still get sick with flu
- Reduces the chances that your child will have to miss school or other activities and you will have to miss work to care for them
- Helps reduce the spread of flu to family and friends, including babies younger than 6 months who are too young to get a flu vaccine, and older people who are more vulnerable to getting very sick from flu
- If your child has certain long-term health problems, they are at higher risk of developing serious flu complications.

When should my child be vaccinated?

Preteens and teens should get a yearly flu vaccine by the end of October. However, getting vaccinated later can still be beneficial. Vaccination should continue to be given throughout the flu season, even into winter or later.

Where can my child get a flu vaccine?

Flu vaccines are available in many places, including doctor's offices or clinics, and sometimes at local health departments, pharmacies, urgent care clinics, grocery stores, and schools. Visit vaccinefinder.org to find a place near you to get a flu vaccine and other recommended vaccines.

Are flu vaccines safe?

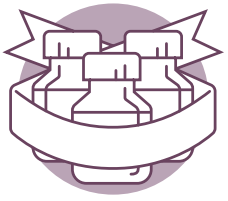
Flu vaccines have a good safety record. Hundreds of millions of Americans have safely received flu vaccines for more than 50 years, and there has been extensive research supporting the safety of flu vaccines.

Like any vaccine or medicine, flu vaccines can have side effects. When they occur, flu vaccine side effects are generally mild and go away on their own within a few days.

Fainting after any vaccine is more common among preteens and teens. To help avoid fainting and injuries related to fainting, preteens and teens should sit or lie down when they get a shot and for about 15 minutes after getting the shot.

How can I get help paying for these vaccines?

Most health insurance plans provide coverage for routine vaccinations. The Vaccines for Children (VFC) program also provides vaccines for children 18 years and younger who are uninsured, underinsured, Medicaid-eligible, American Indian, or Alaska Native. Learn more at www.cdc.gov/Features/VFCprogram.



Talk to your child's doctor or nurse about the flu vaccine or visit **www.cdc.gov/flu/prevent**

Last updated JULY 2019

HPV is a serious disease…
Make sure your child is protected!

What is HPV?

Human papillomavirus (HPV) is the most common sexually transmitted infection in the U.S. HPV can lead to cervical cancer in women, as well as other oral and genital (sex organ) cancers in men and women. HPV also can cause genital warts.

How do you catch HPV?

A person can get the HPV virus during sexual contact without knowing it.

Is HPV serious?

Yes. HPV is the main cause of cervical cancer. In the U.S., about 13,000 women get cervical cancer every year, and about 4,000 die from it. It can also lead to cancers of the vagina, vulva, penis, anus, throat, and mouth.

Is my child at risk?

If and when your child ever begins sexual activity, then they are at risk. At least half of sexually active people get infected with HPV at some point in their lives.

How can I protect my child from HPV?

Vaccination is the best way to protect your child from HPV infection. The vaccine is most effective if given before a person becomes sexually active. However, even if sexual activity has begun, a person can still be protected by the vaccine and should be vaccinated.

Ask your child's healthcare provider if your child is up to date for all vaccines!

Both girls and boys should start the HPV vaccination series at age 11–12 years. All older teens and young adults should also complete the HPV vaccine series if they haven't already done so.

▶ For more information, visit www.vaccineinformation.org

For other vaccine handouts in this series,
visit www.immunize.org/vaccine-summaries

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Technical content reviewed by the Centers for Disease Control and Prevention
Saint Paul, Minnesota ▪ www.immunize.org
www.immunize.org/catg.d/p4310.pdf ▪ Item #P4310 (1/17)

Human Papillomavirus

A Parent's Guide to Preteen and Teen HPV Vaccination

HPV

Why vaccinate against HPV at 11 or 12 years of age?

- The vaccine produces better immunity to fight infection when given at younger ages compared with older ages.
- Vaccination for HPV is much more effective at preventing disease and cancer if all doses in the series are administered before someone's first sexual contact.
- Most American men and women who become sexually active will contract at least one type of HPV virus in their lifetime. Vaccination can reduce their risk of HPV infection.
- Most people who become infected with HPV do not even know it.
- HPV is easily spread by skin-to-skin contact during sexual activity. Even if someone does not have sexual intercourse, they can still get HPV.
- People who choose to have only one lifetime sex partner can still get HPV if their partner has had previous partners who were infected.
- The vaccine has been tested in thousands of people around the world and has been proven to have no serious side effects.
- The vaccine is highly effective against HPV types that cause most cervical cancers and also protects against 90 percent of HPV-associated genital warts.

What is HPV?

Human papillomavirus (HPV) is a common family of viruses that causes infection of the skin or mucous membranes of various areas of the body. There are over 100 different types of HPV viruses. Different types of HPV infection affect different areas of the body. For instance, some types of HPV cause warts in the genital area and other types can lead to abnormal cells on the cervix, vulva, anus, penis, mouth, and throat, sometimes leading to cancer.

How common is HPV?

HPV is very common. According to the Centers for Disease Control and Prevention (CDC), most sexually active American men and women will contract at least one type of HPV virus during their lifetime. HPV is considered the most common sexually transmitted infection in the United States. It is the cause of almost all cervical cancers in women and has been linked to the rise of oral cancers in young people in the United States.

How serious is HPV?

HPV is extremely serious. Approximately 79 million Americans are currently infected with HPV, and about 14 million more become infected each year. In the United States, there are nearly 13,000 new cervical cancer cases diagnosed annually, and more than 4,000 women die from cervical cancer every year. Men are affected too. An estimated 11,500 HPV-associated cancer cases occur in American men each year.

How is HPV spread?

The most common ways to get an HPV infection is from vaginal or anal sex with an infected person; however, this is NOT the only way to get HPV. Infection can also be acquired from oral sex and any skin-to-skin contact with areas infected by HPV. It is possible to have HPV and not know it, so a person can unknowingly spread HPV to another person.

CONTINUED ON NEXT PAGE ▶

Technical content reviewed by the Centers for Disease Control and Prevention

IMMUNIZATION ACTION COALITION Saint Paul, Minnesota • 651-647-9009 • www.vaccineinformation.org • www.immunize.org

www.immunize.org/catg.d/p4250.pdf • Item #P4250 (1/17)

Resources for more information

- Your healthcare provider or local health department
- CDC's information on vaccines and immunization: www.cdc.gov/vaccines
- Immunization Action Coalition's vaccine information website: www.vaccineinformation.org
- Vaccine Education Center at the Children's Hospital of Philadelphia: www.chop.edu/vaccine
- CDC's Vaccines For Children (VFC) program: www.cdc.gov/vaccines/programs/vfc/index.html

SOURCES

American College of Obstetricians and Gynecologists (ACOG) Committee on Adolescent Health Care. Fact Sheet: Human Papillomavirus. ■ www.acog.org

Centers for Disease Control and Prevention (CDC). National Center for Chronic Disease Prevention and Health Promotion. HPV and Cancer. ■ www.cdc.gov/hpv/parents/cancer.html

CDC. National Center for Emerging and Zoonotic Infectious Diseases. Vaccine Safety: Human Papillomavirus Vaccine. ■ www.cdc.gov/vaccinesafety/Vaccines/HPV-vaccine.html

CDC. National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. Genital HPV Infection Fact Sheet. ■ www.cdc.gov/std/HPV/STDFact-HPV.htm

CDC. National Center for Immunization and Respiratory Diseases. HPV Vaccine-Questions and Answers. ■ www.cdc.gov/hpv/parents/questions-answers.html

CDC. National Center for Immunization and Respiratory Diseases. Preteens and Teens Need Vaccines Too! ■ www.cdc.gov/Features/PreteenVaccines/index.html

Reduction in human papillomavirus (HPV) prevalence among young women following HPV vaccine introduction in the United States, National Health and Nutrition Examination Surveys, 2003-2010. *J Infect Dis.* 2013 Aug 1; 208(3):385-93.

Talk to your healthcare provider today about protecting your son or daughter from HPV infection!

Can HPV infection be treated?

There is no treatment for HPV infection; there are only treatments available for the health problems that HPV can cause, such as genital warts, cervical changes, and cancer. In some cases, the body fights off the virus naturally. In cases where the virus cannot be fought off naturally, the person is at risk for serious complications, including cancer.

What is HPV vaccine?

Gardasil 9 is the only HPV vaccine currently being distributed in the United States. Gardasil 9 protects against cervical cancers in women and also against genital warts and cancers of the anus, penis, vagina, vulva, mouth, and throat. For preteens, HPV vaccine is given in two shots, separated by 6 to 12 months. It is important to get all the recommended doses to get the best protection.

At what age should my son or daughter get HPV vaccine?

Routine vaccination with HPV vaccine is recommended for all 11- and 12-year-old boys and girls. The vaccine can be given as early as 9 years of age. If your son or daughter did not receive the two doses of vaccine at the recommended age, they should still start or complete their HPV vaccine series. Your son can be given the vaccine through the age of 21 (and also certain males through age 26 years), and your daughter can be given the vaccine through the age of 26. If the vaccine series is started at age 15 years or older or, if the person has problems with their immune system, three doses are necessary. Check with your healthcare provider to make sure your child is up to date with HPV vaccination.

For HPV vaccine to work best, it is very important for preteens to get all the recommended doses before any sexual activity begins. It is possible to get infected with HPV the very first time they have sexual contact with another person, even if they do not have intercourse. Also, the vaccine produces better immunity to fight infection when given at the younger ages compared to the older ages.

Are HPV vaccines safe?

HPV vaccine has been shown to be very safe. Every vaccine used in the United States is required to go through rigorous safety testing before licensure by the FDA. The HPV vaccine has been extensively tested in clinical trials with more than 28,000 male and female participants. Since the first HPV vaccine was licensed for use in 2006, more than 50 million doses of HPV vaccine have been distributed in the United States. Now in routine use, the vaccine is continually monitored for safety.

In the years of HPV vaccine safety monitoring, no serious safety concerns have been identified. Like other vaccinations, most side effects from HPV vaccination are mild, including fever, headache, and pain and redness in the arm where the shot was given.

Is HPV vaccine effective?

The vaccine has been shown to be highly effective in protecting against the HPV types targeted by the vaccine. A study looking at HPV infections in girls and women before and after the introduction of HPV vaccines shows a significant reduction in vaccine-type HPV in U.S. teens since the vaccine was introduced.

Adapted from a publication developed by the Michigan Department of Community Health, Division of Immunization

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www.immunize.org/catg.d/p4250.pdf ▪ Item #P4250 (1/17)

Meningococcal Vaccines for Preteens and Teens

All preteens and teens should get vaccines to protect against meningococcal disease. Talk with your child's doctor or nurse about meningococcal vaccination to help protect your child's health.

Why does my child need meningococcal vaccines?

Meningococcal vaccines help protect against the bacteria that cause meningococcal disease. Meningococcal disease can refer to any illness caused by a type of bacteria called *Neisseria meningitidis*. Meningococcal disease is not very common in the United States, but teens and young adults are at increased risk.

The two most common types of illnesses include infections of the

- **Lining of the brain and spinal cord (meningitis)**
- **Bloodstream**

Even with treatment, about 10 to 15 out of 100 people with meningococcal disease will die from it. Meningococcal vaccines are the best way to protect preteens and teens from getting meningococcal disease.

When should my child be vaccinated?

Dose 1: *Ages 11-12*
Dose 2: *Age 16*

All preteens and teens should get 2 doses of the meningococcal conjugate (MenACWY) vaccine. They should get the first dose at ages 11-12 and a booster dose at 16 years old. If your teen hasn't gotten this meningococcal shot, talk to their doctor or nurse about getting it as soon as possible.

Teens and young adults (16 through 23 years old) may also get a serogroup B meningococcal (MenB) vaccine (2 doses). The preferred age to get MenB vaccine is 16 through 18 years old. Talk with your teen's doctor or nurse about meningococcal vaccination to help protect your child's health.

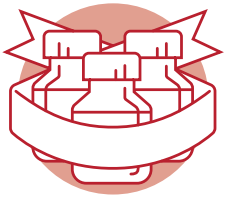
Are meningococcal vaccines safe for my child?

Researchers have studied the meningococcal vaccines very carefully and they are shown to be very safe. Like any vaccine, meningococcal vaccines may cause mild side effects, like redness and soreness where the shot was given (usually in the arm). Note that your child can get both meningococcal vaccines during the same visit, but in different arms.

Some preteens and teens might faint after getting a meningococcal vaccine or any shot. To help avoid fainting and injuries related to fainting, preteens and teens should sit or lie down when they get a shot and then for about 15 minutes after getting the shot. Serious side effects from meningococcal vaccines are rare.

How can I get help paying for these vaccines?

Most health insurance plans cover routine vaccinations. The Vaccines for Children (VFC) program also provides vaccines for children 18 years and younger who are uninsured, underinsured, Medicaid-eligible, American Indian, or Alaska Native. Learn more at www.cdc.gov/Features/VFCprogram.



Talk to your child's doctor or nurse about meningococcal vaccines, or visit **www.cdc.gov/meningococcal/vaccine-info.html**

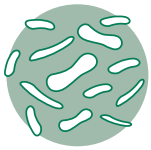
Last updated JULY 2019

Tdap Vaccine for Preteens and Teens

All preteens should get one Tdap shot when they are 11 or 12 years old to help protect against tetanus, diphtheria, and whooping cough. Talk to your child's doctor or nurse if they haven't gotten this vaccine yet.

Why does my child need a Tdap vaccine?

Babies and young children get shots called DTaP to help protect them from diphtheria, tetanus, and whooping cough (pertussis). But as children get older, the protection from these shots starts to decrease. The Tdap vaccine helps protect your preteen or teen from the same diseases as the DTaP shots.

Disease	Symptoms/Complications	Is it serious?
 Tetanus	• Spasms (painful muscle cramps in the jaw and neck muscles or stomach) • Breathing problems • Painful muscle stiffness all over the body	• **Yes. Kids who get tetanus could spend weeks in intensive care.** • As many as 1 out of 5 people who get tetanus will die from it.
 Diphtheria	• Thick coating in the back of the throat that can make it hard to breathe and swallow • Paralysis • Heart failure	• **Yes. About 1 out of 10 people who get diphtheria will die from it.**
 Whooping Cough	• Bad cough that can make it difficult to breathe after coughing fits • Cough that can last for many weeks • Violent coughing fits with vomiting, which can lead to broken ribs	• **Yes. It can be serious for people of all ages, but especially serious, even deadly, for babies.** • Whooping cough can also cause your child to miss school and other activities.

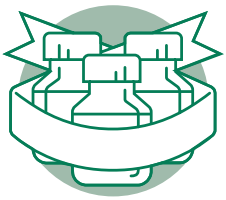
Is the Tdap vaccine safe for my child?

Researchers have studied the Tdap shot very carefully and it is shown to be very safe. Like any vaccine or medicine, the Tdap shot can cause side effects. The most common side effects are mild and include redness and soreness in the arm where the shot was given, headache, fever, or tiredness.

Some preteens and teens might faint after getting the Tdap vaccine or any shot. To help avoid fainting and injuries related to fainting, preteens and teens should sit or lie down when they get a shot and then for about 15 minutes after getting the shot. Serious side effects from the Tdap shot are rare.

How can I get help paying for these vaccines?

Most health insurance plans cover routine vaccinations. The Vaccines for Children (VFC) program also provides vaccines for children 18 years and younger who are uninsured, underinsured, Medicaid-eligible, American Indian, or Alaska Native. Learn more at www.cdc.gov/Features/VFCprogram.



Talk to your child's doctor or nurse about the Tdap vaccine, or visit **www.cdc.gov/vaccines/Tdap**

Last updated JULY 2019

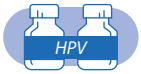
Vaccines for Preteens and Teens: What Parents Should Know

All boys and girls need three vaccines at ages 11-12 to protect against serious diseases. Preteens and teens should also get a yearly flu vaccine, as well as any vaccines they missed when they were younger.

What vaccines does my child need?

Dose 1: *Ages 11-12*
Dose 2: *Age 16*

Meningococcal vaccines protect against a type of bacteria that can cause serious illnesses. The two most common types of illnesses include infections of the lining of the brain and spinal cord (meningitis) and bloodstream. All preteens should get the meningococcal conjugate vaccine (MenACWY). Teens may also receive a serogroup B meningococcal vaccine (MenB), preferably at 16 through 18 years old.



Dose 1: *Ages 11-12*
Dose 2: *6-12 months later*

HPV vaccine protects both girls and boys from future infections that can lead to certain types of cancer. Children who get their first dose on or after their 15th birthday will need three doses.

Dose 1: *Ages 11-12*

Tdap vaccine protects against three serious diseases: tetanus, diphtheria, and pertussis (whooping cough).

Yearly Dose:
Ages 6 months and older

Flu vaccine helps protect against seasonal flu. Even healthy preteens and teens can get very sick from flu and spread it to others. The best time to get an annual flu vaccine is before flu begins causing illness in your community, ideally before the end of October. Flu vaccination is beneficial as long as flu viruses are circulating, even in January or later.

When should my child be vaccinated?

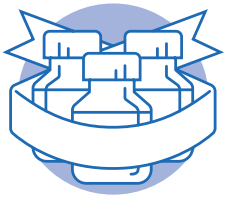
A good time to get these vaccines is during a yearly wellness check. Your child can also get these vaccines at a physical exam required for school, sports, or camp. **If your child missed any doses of recommended vaccines, ask your doctor or nurse about getting them now.**

Are these vaccines safe?

These vaccines have been studied very carefully and are very safe. They can cause mild side effects, like soreness or redness in the part of the arm where the shot is given. Some preteens or teens might faint after getting a shot. Sitting or lying down when getting a shot, and then for about 15 minutes after the shot, can help prevent fainting. Serious side effects are rare. It is very important to tell the doctor or nurse if your child has any serious allergies, including allergies to yeast, latex, or chicken eggs, before they receive any vaccines.

Can I get help paying for these vaccines?

Most health insurance plans cover routine vaccinations. The Vaccines for Children (VFC) program also provides vaccines for children 18 years and younger who are uninsured, underinsured, Medicaid-eligible, American Indian, or Alaska Native. Learn more at www.cdc.gov/Features/VFCprogram.

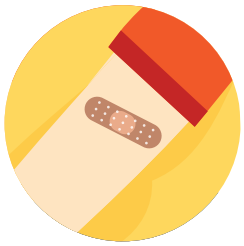


Talk to your child's doctor or nurse about the vaccines your child needs or visit **www.cdc.gov/vaccines/parents**

Last updated JULY 2019

The Flu:

A Guide for Parents



Influenza (also known as flu) is a contagious respiratory illness caused by influenza viruses that infect the nose, throat and lungs. Flu is different from a cold, and usually comes on suddenly. Each year flu viruses cause millions of illnesses, hundreds of thousands of hospital stays and thousands or tens of thousands of deaths in the United States.

Flu can be very dangerous for children. CDC estimates that between 6,000 and 26,000 children younger than 5 years have been hospitalized each year in the United States because of influenza. The flu vaccine is safe and helps protect children from flu.

What parents should know

How serious is flu?

While flu illness can vary from mild to severe, children often need medical care because of flu. Children younger than 5 years and children of any age with certain long-term health problems are at high risk of flu complications like pneumonia, bronchitis, sinus and ear infections. Some health problems that are known to make children more vulnerable to flu include asthma, diabetes and disorders of the brain or nervous system.

How does flu spread?

Flu viruses are thought to spread mainly by droplets made when someone with flu coughs, sneezes or talks. These droplets can land in the mouths or noses of people nearby. A person also can get flu by touching something that has flu virus on it and then touching their mouth, eyes, or nose.

What are flu symptoms?

Flu symptoms can include fever, cough, sore throat, runny or stuffy nose, body aches, headache, chills, feeling tired and sometimes vomiting and diarrhea (more common in children than adults). Some people with the flu will not have a fever.

Protect your child

How can I protect my child from flu?

The first and best way to protect against flu is to get a yearly flu vaccine for yourself and your child.

- Flu vaccination is recommended for everyone 6 months and older every year. Flu shots and nasal spray flu vaccines are both options for vaccination.
- It's especially important that young children and children with certain long-term health problems get vaccinated.
- Caregivers of children at high risk of flu complications should get a flu vaccine. (Babies younger than 6 months are at high risk for serious flu complications, but too young to get a flu vaccine.)
- Pregnant women should get a flu vaccine to protect themselves and their baby from flu. Research shows that flu vaccination protects the baby from flu for several months after birth.
- Flu viruses are constantly changing and so flu vaccines are updated often to protect against the flu viruses that research indicates are most likely to cause illness during the upcoming flu season.

Is flu vaccine safe?

Flu vaccines are made using strict safety and production measures. Millions of people have safely received flu vaccines for decades. Flu shots and nasal spray flu vaccines are both options for vaccination. Different types of flu vaccines are licensed for different ages. Each person should get one that is appropriate for their age. CDC and the American Academy of Pediatrics recommend an annual flu vaccine for all children 6 months and older.

What are the benefits of getting a flu vaccine?

- **A flu vaccine can keep you and your child from getting sick.** When vaccine viruses and circulating viruses are matched, flu vaccination has been shown to reduce the risk of getting sick with flu by about half.
- **Flu vaccines can keep your child from being hospitalized from flu.** One recent study showed that flu vaccine reduced children's risk of flu-related pediatric intensive care unit admission by 74%.

- **Flu vaccine can prevent your child from dying from flu.** A study using data from recent flu seasons found that flu vaccine reduced the risk of flu-associated death by half among children with high risk medical conditions and by nearly two-thirds among children without medical conditions.
- **Flu vaccination also may make your illness milder if you do get sick.**
- **Getting yourself and your child vaccinated also can protect others** who may be more vulnerable to serious flu illness, like babies and young children, older people, and people with certain long-term health problems.

What are some other ways I can protect my child against flu?

In addition to getting a flu vaccine, you and your child should take everyday actions to help prevent the spread of germs.

Stay away from people who are sick as much as possible to keep from getting sick yourself. If you or your child are sick, avoid others as much as possible to keep from infecting them. Also, remember to regularly cover your coughs and sneezes, wash your hands often, avoid touching your eyes, nose and mouth, and clean surfaces that may be contaminated with flu viruses. These everyday actions can help reduce your chances of getting sick and prevent the spread of germs to others if you are sick. However, a yearly flu vaccine is the best way to prevent flu illness.

If your child is sick

What can I do if my child gets sick?

Talk to your doctor early if you are worried about your child's illness.

Make sure your child gets plenty of rest and drinks enough fluids.

If your child is 5 years or older and does not have a long-term health problems and gets flu symptoms, including a fever and/or cough, consult your doctor as needed.

Children younger than 5 years of age – especially those younger than 2 years – and children with certain long-term health problems (including asthma, diabetes and disorders of the brain or nervous system), are at high risk of serious flu complications. Call your doctor or take your child to the doctor right away if they develop flu symptoms.

What if my child seems very sick?

Even healthy children can get very sick from flu. If your child is experiencing the following emergency warning signs, you should go to the emergency room:

- Fast breathing or trouble breathing
- Bluish lips or face
- Ribs pulling in with each breath
- Chest pain
- Severe muscle pain (child refuses to walk)
- Dehydration (no urine for 8 hours, dry mouth, no tears when crying)
- Not alert or interacting when awake
- Seizures
- Fever above 104°F
- In children less than 12 weeks, any fever
- Fever or cough that improve but then return or worsen
- Worsening of chronic medical conditions

This list is not all inclusive. Please consult your medical provider for any other symptom that is severe or concerning.

Is there a medicine to treat flu?

Yes. Antiviral drugs are prescription medicines that can be used to treat flu illness. They can shorten your illness and make it milder, and they can prevent serious complications that could result in a hospital stay. Antivirals work best when started during the first 2 days of illness. Antiviral drugs are recommended to treat flu in people who are very sick (for example, people who are in the hospital) or people who are at high risk of serious flu complications who get flu symptoms. Antivirals can be given to children and pregnant women.

How long can a sick person spread flu to others?

People with flu may be able to infect others from 1 day before getting sick to up to 5 to 7 days after. Severely ill people or young children may be able to spread the flu longer, especially if they still have symptoms.

Can my child go to school, day care, or camp if he or she is sick?

No. Your child should stay home to rest and to avoid spreading flu to other children or caregivers.

When can my child go back to school after having flu?

Keep your child home from school, day care, or camp for at least 24 hours after their fever is gone. (The fever should be gone without the use of a fever-reducing medicine.) A fever is defined as 100°F (37.8°C)* or higher.

*Many authorities use either 100 (37.8 degrees Celsius) or 100.4 F (38.0 degrees Celsius) as a cut-off for fever, but this number can vary depending on factors such as the method of measurement and the age of the person.

March 2019 | 19_303750-A

For more information, visit www.cdc.gov/flu/protect/children.htm or call 800-CDC-INFO

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Reliable Sources of Immunization Information: Where Parents Can Go to Find Answers!

Websites

American Academy of Pediatrics (AAP)
www.aap.org/immunization

Centers for Disease Control and Prevention (CDC)
FOR PARENTS: www.cdc.gov/vaccines/parents
FOR HEALTHCARE PROVIDERS: www.cdc.gov/vaccines

History of Vaccines
www.historyofvaccines.org

Immunization Action Coalition (IAC)
FOR THE PUBLIC: www.vaccineinformation.org
FOR HEALTHCARE PROVIDERS: www.immunize.org

U.S. Dept. of Health and Human Services (HHS)
www.vaccines.gov

Vaccinate Your Family (formerly Every Child by Two)
www.vaccinateyourfamily.org

Vaccine Education Center (VEC), Children's Hospital of Philadelphia
www.chop.edu/centers-programs/vaccine-education-center

Vaxopedia
www.vaxopedia.org/about/

Voices for Vaccines (VFV)
FOR PARENTS, OTHER ADULTS, AND HEALTHCARE PROVIDERS:
www.voicesforvaccines.org

Apps for Mobile Devices

Child Health Tracker Developed by the American Academy of Pediatrics, this "tracker" gives parents the power of on-demand access to guidance on vaccinations and milestones they should be expecting with each birthday. Also included are tools like parent handouts for each well child visit. Available at a nominal cost from the American Academy of Pediatrics.

Vaccines on the Go: What You Should Know – This app provides parents with reliable information about the science, safety, and importance of vaccines and the diseases they prevent. A free app from the Vaccine Education Center at the Children's Hospital of Philadelphia. Available for Android and Apple devices.

TravWell – Use this app to build a trip to get destination-specific vaccine recommendations, a checklist of what is needed to prepare for travel and much more. A free app from Centers for Disease Control and Prevention.

Books for Parents

Baby 411 by Denise Fields and Ari Brown, MD, Windsor Peak Press, 7th edition, 2015. Available from your favorite local or online bookstore.

Mama Doc Medicine: Finding Calm and Confidence in Parenting, Child Health, and World-Life Balance by Wendy Sue Swanson, MD (aka "Seattle Mama Doc"), 2014. Available from American Academy of Pediatrics at http://shop.aap.org/for-parents.

Parents Guide to Childhood Immunization from Centers for Disease Control and Prevention. Available at www.cdc.gov/vaccines/parents/tools/parents-guide/index.html to download or order.

Vaccine-Preventable Diseases: The Forgotten Story by Texas Children's Hospital vaccine experts R. Cunningham, et al. Available at www.tchorderprocessing.com to order.

Vaccines and Your Child, Separating Fact from Fiction by Paul Offit, MD, and Charlotte Moser, Columbia University Press, 2011. Available at your favorite local or online bookstore.

Videos

IAC's Video Library – Go to the Immunization Action Coalition's website for parents and the public, www.vaccineinformation.org/videos, for hundreds of video clips about vaccines and vaccine-preventable diseases.

Shot by Shot Video Collection – Go to www.shotbyshot.org to read people's stories of vaccine-preventable diseases shared on the California Immunization Coalition website.

Phone Numbers

CDC–INFO Contact Center – Operated by the Centers for Disease Control and Prevention, this number is for both members of the general public and healthcare professionals who have questions about immunization and vaccine-preventable diseases. Call (800) CDC-INFO or (800) 232-4636. TTY: (888) 232-6348. CDC-INFO's operating hours are Monday through Friday from 8:00 A.M. to 8:00 P.M. (ET).

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www.immunize.org/catg.d/p4012.pdf • Item #P4012 (5/19)

Top Ten Reasons to Protect Your Child by Vaccinating

Here are the top ten reasons to protect your child by vaccinating them against serious diseases.

1 Parents want to do everything possible to make sure their children are healthy and protected from preventable diseases. Vaccination is the best way to do that.

2 Vaccination protects children from serious illness and complications of vaccine-preventable diseases which can include amputation of an arm or leg, hospitalization, pneumonia, hearing loss, convulsions, brain damage, and death.

3 Vaccine-preventable diseases, such as measles, whooping cough, and influenza are still a threat. They continue to infect U.S. children, resulting in hospitalizations and deaths every year.

4 Though vaccination has led to a dramatic decline in the number of U.S. cases of several infectious diseases, some, such as measles, are common in other countries and are brought to the U.S. by international travelers. If children are not vaccinated, they could easily get one of these diseases from a traveler or while traveling themselves.

5 Outbreaks of preventable diseases occur when many parents decide not to vaccinate their children.

6 Vaccination is safe and effective. All vaccines undergo long and careful review by scientists, doctors, and the federal government to make sure they are safe.

7 Organizations such as the American Academy of Pediatrics, the American Academy of Family Physicians, and the Centers for Disease Control and Prevention all strongly support protecting children with recommended vaccinations.

8 Vaccination protects others you care about, including family members, friends, and grandparents.

9 If children aren't vaccinated, they can spread disease to other children who are too young to be vaccinated or to people with weakened immune systems, such as transplant recipients and people with cancer. This could result in long-term complications and even death for these vulnerable people.

10 We all have a public health commitment to our communities to protect each other and each other's children by vaccinating our own family members.

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www.immunize.org/catg.d/p4016.pdf ▪ Item #P4016 (8/20)

If You Choose Not to Vaccinate Your Child, **Understand the Risks and Responsibilities.**

Reviewed March 2012

If you choose to delay some vaccines or reject some vaccines entirely, there can be risks. Please follow these steps to protect your child, your family, and others.

With the decision to delay or reject vaccines comes an important responsibility that could save your child's life, or the life of someone else.

Any time that your child is ill and you:

- call 911;
- ride in an ambulance;
- visit a hospital emergency room; or
- visit your child's doctor or any clinic

you must tell the medical staff that your child has not received all the vaccines recommended for his or her age.

Keep a vaccination record easily accessible so that you can report exactly which vaccines your child has received, even when you are under stress.

Telling health care professionals your child's vaccination status is essential for two reasons:

- When your child is being evaluated, the doctor will need to consider the possibility that your child has a vaccine-preventable disease. Many of these diseases are now uncommon, but they still occur.
- The people who help your child can take precautions, such as isolating your child, so that the disease does not spread to others. One group at high risk for contracting disease is infants who are too young to be fully vaccinated. For example, the measles vaccine is not usually recommended for babies younger than 12 months. Very young babies who get measles are likely to be seriously ill, often requiring hospitalization. Other people at high risk for contracting disease are those with weaker immune systems, such as some people with cancer and transplant recipients.

Before an outbreak of a vaccine-preventable disease occurs in your community:

- Talk to your child's doctor or nurse to be sure your child's medical record is up to date regarding vaccination status. Ask for a copy of the updated record.
- Inform your child's school, childcare facility, and other caregivers about your child's vaccination status. -
- Be aware that your child can catch diseases from people who don't have any symptoms. For example, Hib meningitis can be spread from people who have the bacteria in their body but are not ill. You can't tell who is contagious.

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When there is vaccine-preventable disease in your community:

- It may not be too late to get protection by getting vaccinated. Ask your child's doctor.
- If there are cases (or, in some circumstances, a single case) of a vaccine-preventable disease in your community, you may be asked to take your child out of school, childcare, or organized activities (for example, playgroups or sports).
- Your school, childcare facility, or other institution will tell you when it is safe for an unvaccinated child to return. Be prepared to keep your child home for several days up to several weeks.
- Learn about the disease and how it is spread. It may not be possible to avoid exposure. For example, measles is so contagious that hours after an infected person has left the room, an unvaccinated person can get measles just by entering that room. -
- Each disease is different, and the time between when your child might have been exposed to a disease and when he or she may get sick will vary. Talk with your child's doctor or the health department to get their guidelines for determining when your child is no longer at risk of coming down with the disease.

Be aware.

- Any vaccine-preventable disease can strike at any time in the U.S. because all of these diseases still circulate either in the U.S. or elsewhere in the world.
- Sometimes vaccine-preventable diseases cause outbreaks, that is, clusters of cases in a given area.
- Some of the vaccine-preventable diseases that still circulate in the U.S. include whooping cough, chickenpox, Hib (a cause of meningitis), and influenza. These diseases, as well as the other vaccine-preventable diseases, can range from mild to severe and life-threatening. In most cases, there is no way to know beforehand if a child will get a mild or serious case.
- For some diseases, one case is enough to cause concern in a community. An example is measles, which is one of the most contagious diseases known. This disease spreads quickly among people who are not immune.

If you know your child is exposed to a vaccine-preventable disease for which he or she has not been vaccinated:

- Learn the early signs and symptoms of the disease.
- Seek immediate medical help if your child or any family members develop early signs or symptoms of the disease. -

  IMPORTANT: Notify the doctor's office, urgent care facility, ambulance personnel, or emergency room staff that your child has not been fully vaccinated before medical staff have contact with your child or your family members. They need to know that your child may have a vaccine-preventable disease so that they can treat your child correctly as quickly as possible. Medical staff also can take simple precautions to prevent diseases from spreading to others if they know ahead of time that their patient may have a contagious disease.

- Follow recommendations to isolate your child from others, including family members, and especially infants and people with weakened immune systems. Most vaccine-preventable diseases can be very dangerous to infants who are too young to be fully vaccinated, or children who are not vaccinated due to certain medical conditions.
- Be aware that for some vaccine-preventable diseases, there are medicines to treat infected people and medicines to keep people they come in contact with from getting the disease.
- Ask your health care professional about other ways to protect your family members and anyone else who may come into contact with your child.
- Your family may be contacted by the state or local health department who track infectious disease outbreaks in the community. -

If you travel with your child:

- Review the CDC travelers' information website *(http://www.cdc.gov/travel)* before traveling to learn about possible disease risks and vaccines that will protect your family. Diseases that vaccines prevent remain common throughout the world, including Europe. -
- Don't spread disease to others. If an unimmunized person develops a vaccine-preventable disease while traveling, to prevent transmission to others, he or she should not travel by a plane, train, or bus until a doctor determines the person is no longer contagious.

2022 Recommended Immunizations for Children from Birth Through 6 Years Old

Vaccine	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19–23 months	2–3 years	4–6 years
HepB	HepB	HepB			HepB						
RV			RV	RV	RV						
DTaP			DTaP	DTaP	DTaP		DTaP				DTaP
Hib			Hib	Hib	Hib	Hib					
PCV13			PCV13	PCV13	PCV13	PCV13					
IPV			IPV	IPV	IPV						IPV
Influenza (Yearly)*											
MMR											MMR
Varicella											Varicella
HepA§											

Is your family growing? To protect your new baby against whooping cough, get a Tdap vaccine. The recommended time is the 27th through 36th week of pregnancy. Talk to your doctor for more details.

Shaded boxes indicate the vaccine can be given during shown age range.

COVID-19 VACCINATION IS RECOMMENDED FOR AGES 5 YEARS AND OLDER.

NOTE:
If your child misses a shot, you don't need to start over. Just go back to your child's doctor for the next shot. Talk with your child's doctor if you have questions about vaccines.

FOOTNOTES:

* Two doses given at least four weeks apart are recommended for children age 6 months through 8 years of age who are getting an influenza (flu) vaccine for the first time and for some other children in this age group.

§ Two doses of HepA vaccine are needed for lasting protection. The first dose of HepA vaccine should be given between 12 months and 23 months of age. The second dose should be given 6 months after the first dose. All children and adolescents over 24 months of age who have not been vaccinated should also receive 2 doses of HepA vaccine.

If your child has any medical conditions that put him at risk for infection or is traveling outside the United States, talk to your child's doctor about additional vaccines that he or she may need.

See back page for more information on vaccine-preventable diseases and the vaccines that prevent them.

For more information, call toll-free
1-800-CDC-INFO (1-800-232-4636)
or visit
www.cdc.gov/vaccines/parents

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Vaccine-Preventable Diseases and the Vaccines that Prevent Them

Disease	Vaccine	Disease spread by	Disease symptoms	Disease complications
Chickenpox	Varicella vaccine protects against chickenpox.	Air, direct contact	Rash, tiredness, headache, fever	Infected blisters, bleeding disorders, encephalitis (brain swelling), pneumonia (infection in the lungs), death
Diphtheria	DTaP* vaccine protects against diphtheria.	Air, direct contact	Sore throat, mild fever, weakness, swollen glands in neck	Swelling of the heart muscle, heart failure, coma, paralysis, death
Hib	Hib vaccine protects against *Haemophilus influenzae* type b.	Air, direct contact	May be no symptoms unless bacteria enter the blood	Meningitis (infection of the covering around the brain and spinal cord), intellectual disability, epiglottitis (life-threatening infection that can block the windpipe and lead to serious breathing problems), pneumonia (infection in the lungs), death
Hepatitis A	HepA vaccine protects against hepatitis A.	Direct contact, contaminated food or water	May be no symptoms, fever, stomach pain, loss of appetite, fatigue, vomiting, jaundice (yellowing of skin and eyes), dark urine	Liver failure, arthralgia (joint pain), kidney, pancreatic and blood disorders, death
Hepatitis B	HepB vaccine protects against hepatitis B.	Contact with blood or body fluids	May be no symptoms, fever, headache, weakness, vomiting, jaundice (yellowing of skin and eyes), joint pain	Chronic liver infection, liver failure, liver cancer, death
Influenza (Flu)	Flu vaccine protects against influenza.	Air, direct contact	Fever, muscle pain, sore throat, cough, extreme fatigue	Pneumonia (infection in the lungs), bronchitis, sinus infections, ear infections, death
Measles	MMR** vaccine protects against measles.	Air, direct contact	Rash, fever, cough, runny nose, pink eye	Encephalitis (brain swelling), pneumonia (infection in the lungs), death
Mumps	MMR**vaccine protects against mumps.	Air, direct contact	Swollen salivary glands (under the jaw), fever, headache, tiredness, muscle pain	Meningitis (infection of the covering around the brain and spinal cord) , encephalitis (brain swelling), inflammation of testicles or ovaries, deafness, death
Pertussis	DTaP* vaccine protects against pertussis (whooping cough).	Air, direct contact	Severe cough, runny nose, apnea (a pause in breathing in infants)	Pneumonia (infection in the lungs), death
Polio	IPV vaccine protects against polio.	Air, direct contact, through the mouth	May be no symptoms, sore throat, fever, nausea, headache	Paralysis, death
Pneumococcal	PCV13 vaccine protects against pneumococcus.	Air, direct contact	May be no symptoms, pneumonia (infection in the lungs)	Bacteremia (blood infection), meningitis (infection of the covering around the brain and spinal cord), death
Rotavirus	RV vaccine protects against rotavirus.	Through the mouth	Diarrhea, fever, vomiting	Severe diarrhea, dehydration, death
Rubella	MMR** vaccine protects against rubella.	Air, direct contact	Sometimes rash, fever, swollen lymph nodes	Very serious in pregnant women—can lead to miscarriage, stillbirth, premature delivery, birth defects
Tetanus	DTaP* vaccine protects against tetanus.	Exposure through cuts in skin	Stiffness in neck and abdominal muscles, difficulty swallowing, muscle spasms, fever	Broken bones, breathing difficulty, death

* DTaP combines protection against diphtheria, tetanus, and pertussis.
** MMR combines protection against measles, mumps, and rubella.

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Immunizations for Babies

A Guide for Parents

These are the vaccinations your baby needs!

At birth	**HepB**
2 months	**HepB** 1–2 mos[1] + **DTaP** + **PCV13** + **Hib** + **Polio** + **RV**
4 months	**HepB**[2] + **DTaP** + **PCV13** + **Hib** + **Polio** + **RV**
6 months	**HepB** 6–18 mos[1] + **DTaP** + **PCV13** + **Hib**[3] + **Polio** 6–18 mos[1] + **RV**[4] + **Influenza**[5]
12 months and older	**MMR** 12–15 mos[1] + **DTaP** 15–18 mos[1] + **PCV13** 12–15 mos[1] + **Hib** 12–15 mos[1] + **Chickenpox** 12–15 mos[1] + **HepA**[6] 12–23 mos[1] + **Influenza**[5]

Check with your doctor or nurse to make sure your baby is receiving all vaccinations on schedule. Many times vaccines are combined to reduce the number of injections. Be sure you ask for a record card with the dates of your baby's vaccinations; bring this with you to every visit.

Here's a list of the diseases your baby will be protected against:

HepB: hepatitis B, a serious liver disease

DTaP: diphtheria, tetanus (lockjaw), and pertussis (whooping cough)

PCV13: pneumococcal conjugate vaccine protects against a serious blood, lung, and brain infection

Hib: *Haemophilus influenzae* type b, a serious brain, throat, and blood infection

Polio: polio, a serious paralyzing disease

RV: rotavirus infection, a serious diarrheal disease

Influenza: a serious lung infection

MMR: measles, mumps, and rubella

HepA: hepatitis A, a serious liver disease

Chickenpox: also called varicella

Notes to above chart:

1. This is the age range in which this vaccine should be given.
2. Your baby may not need a dose of Hep B vaccine at age 4 months, depending on the vaccine used. Check with your doctor or nurse.
3. Your baby may not need a dose of Hib vaccine at age 6 months, depending on the vaccine used. Check with your doctor or nurse.
4. Your baby may not need a dose of RV vaccine at age 6 months, depending on the vaccine used. Check with your doctor or nurse.
5. All children age 6 months and older should be vaccinated against influenza in the fall or winter of each year.
6. Your child will need 2 doses of HepA vaccine, given at least 6 months apart.

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www.immunize.org/catg.d/p4010.pdf • Item #P4010 (8/20)

When Do Children and Teens Need Vaccinations?

Age	HepB Hepatitis B	DTaP/Tdap Diphtheria, tetanus, pertussis (whooping cough)	Hib *Haemophilus influenzae* type b	IPV Polio	PCV13 Pneumococcal conjugate	RV Rotavirus	MMR Measles, mumps, rubella	Varicella Chickenpox	HepA Hepatitis A	HPV Human papillomavirus	Men-ACWY Meningococcal	MenB Meningococcal	Influenza Flu
at Birth (within 24 hours of birth)	✔												
2 months	✔	✔	✔	✔	✔	✔							
4 months	✔[1]	✔	✔	✔	✔	✔							
6 months	✔ (6–18 mos)	✔	✔[1]	✔ (6–18 mos)	✔	✔[1]							✔ (6 mos and older)
12 months			✔ (12–15 mos)		✔ (12–15 mos)		✔ (12–15 mos)	✔ (12–15 mos)	✔✔ (2 doses given 6 months apart routinely at age 12-23 months) HepA vaccine (2 doses) is also recommended for children and teens not previously vaccinated.				
15 months		✔[2] (15–18 mos)											
18 months													
19–23 months													
4–6 years		✔		✔			✔	✔					**Influenza vaccine is recommended every year for everyone age 6 months and older.**
7–10 years													
11–12 years		✔ (Tdap)								✔✔[3]	✔		
13–15 years													
16–18 years											✔	✔✔[4,5]	

One dose each fall or winter to all people ages 6 mos and older. Some children younger than age 9 years need 2 doses; ask your child's health-care provider if your child needs more than 1 dose.

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www.immunize.org/catg.d/p4050.pdf • Item #P4050 (5/20)

FOOTNOTES

1. Your child may not need this dose depending on the brand of vaccine that your healthcare provider uses.
2. This dose of DTaP may be given as early as age 12 months if it has been 6 months since the previous dose.
3. Children with certain medical conditions will need a third dose.
4. This vaccine may be given to healthy teens. It is also recommended for adolescents with certain health conditions.
5. Your teen may need an additional dose depending on your healthcare provider's recommendation.