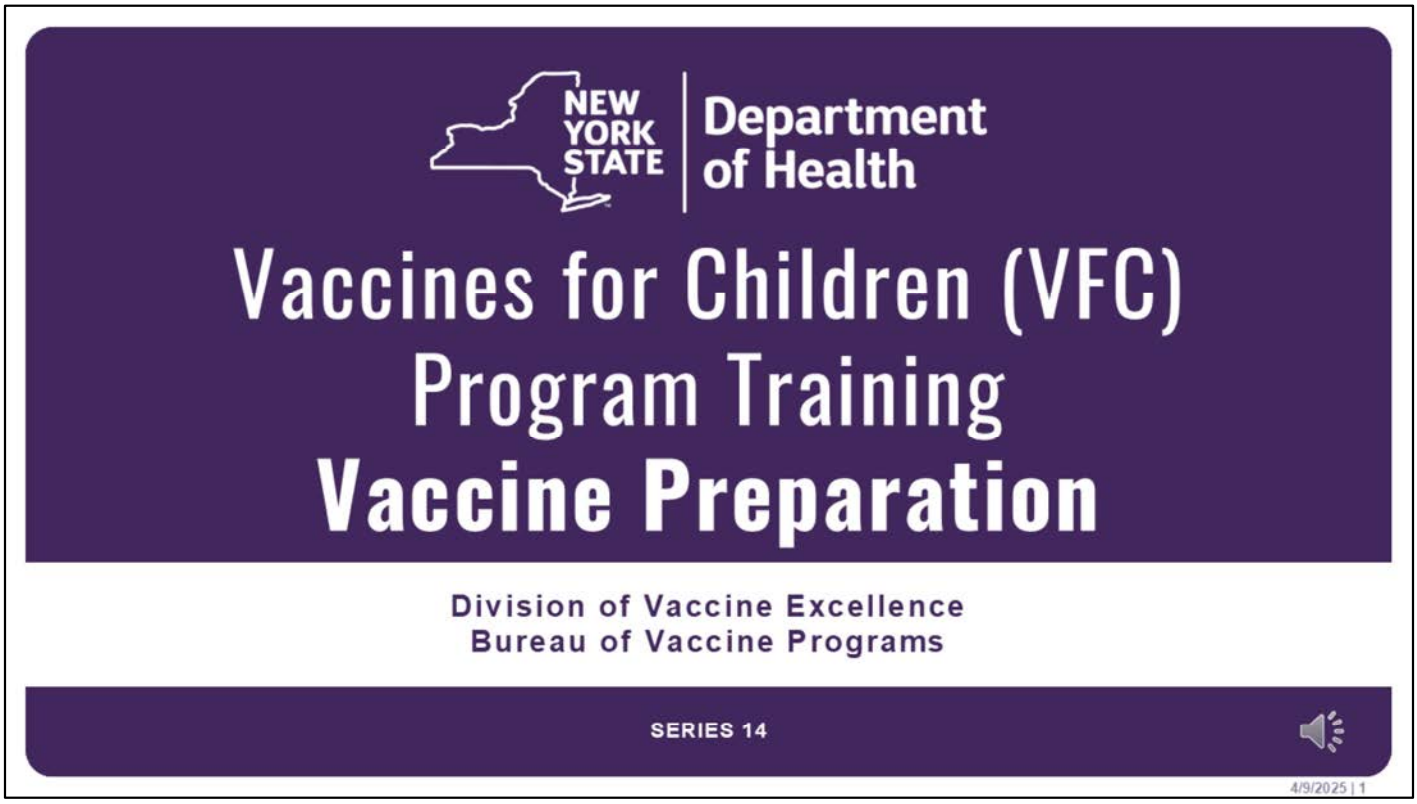
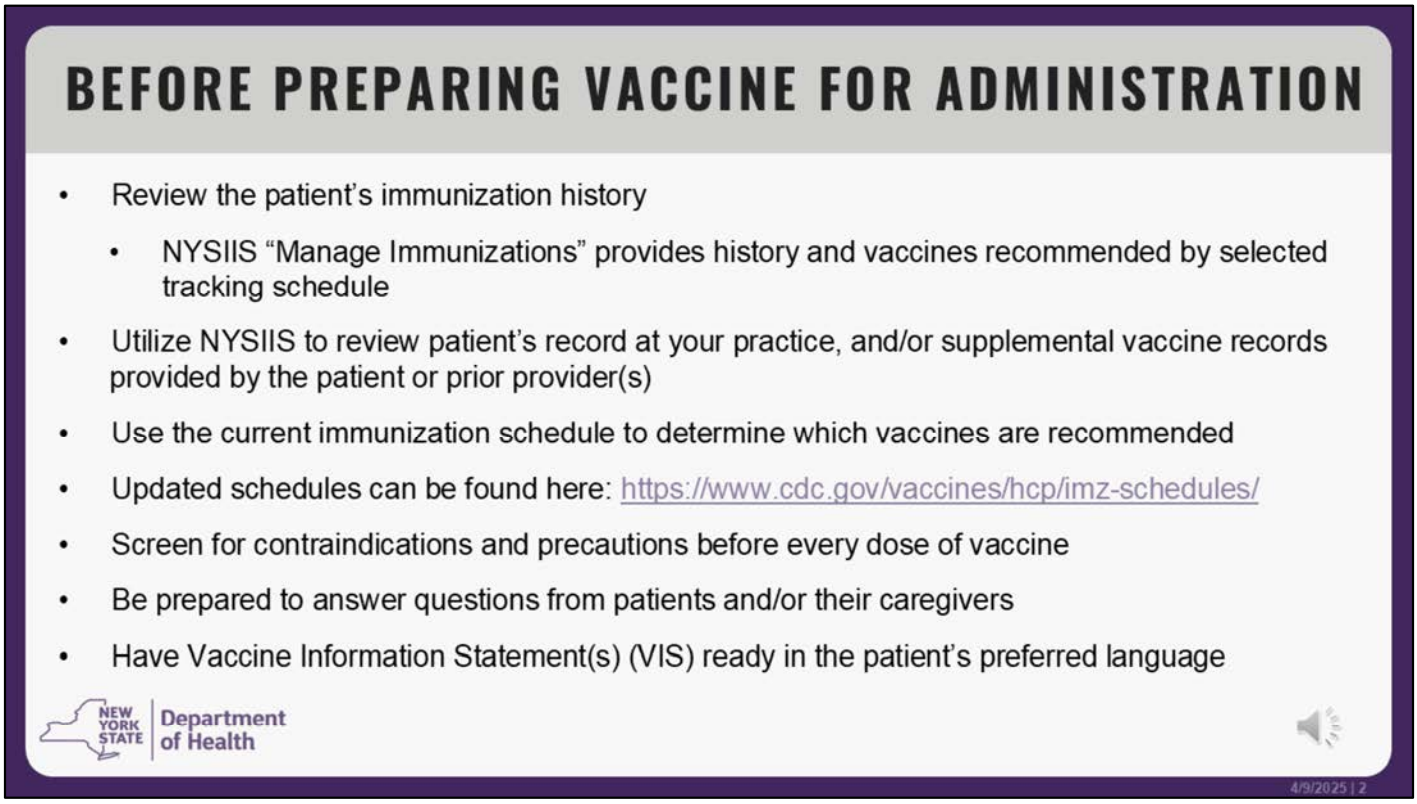


In this final section of the VFC training series, we will be discussing how to prepare for vaccine administration.



Before administering a vaccination, it is important to review the patient's immunization history. Use NYSIIS first to review their immunization history; however, if incomplete, you can also view the patient's record at your practice, and/or written documentation from the patient if they received vaccinations from another provider, who has not entered the information into NYSIIS.

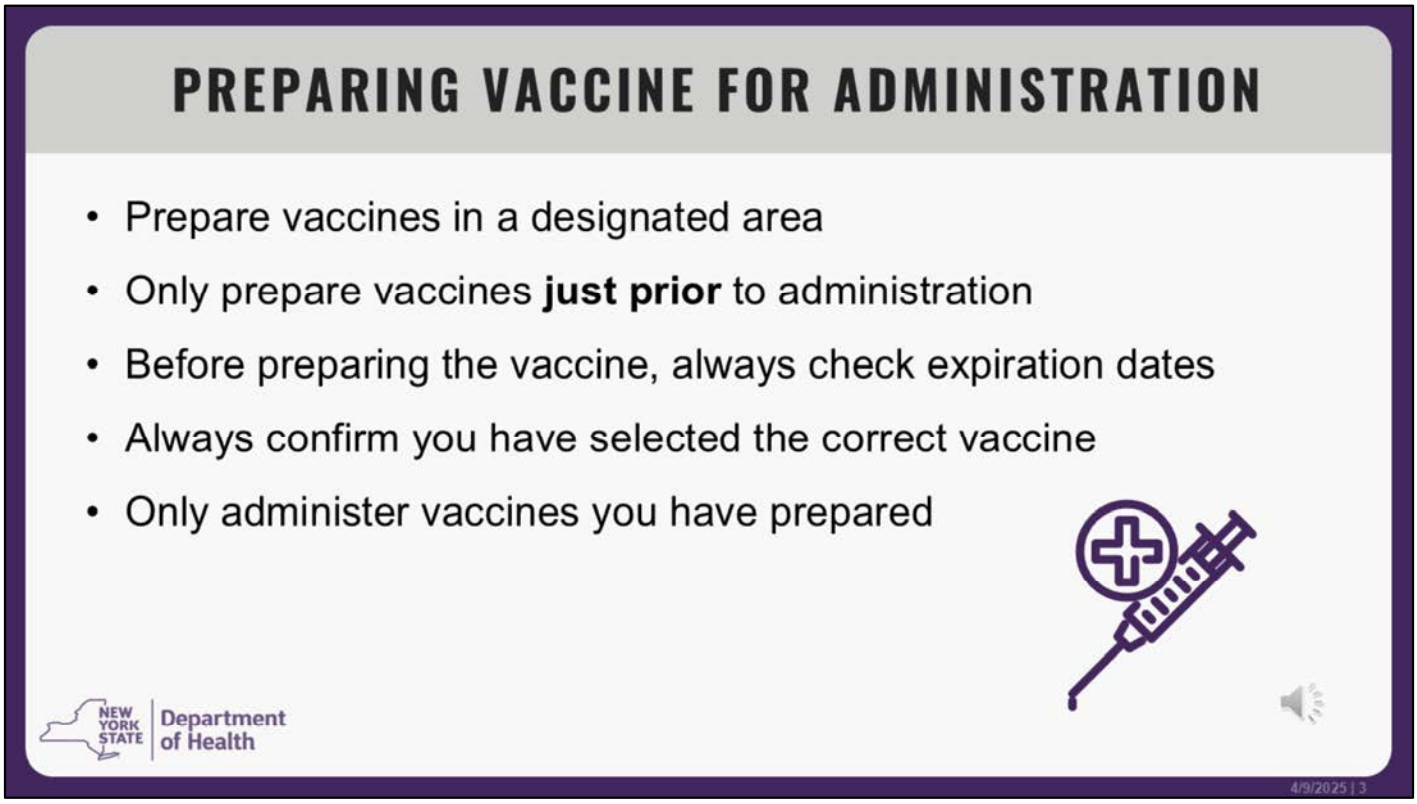
Reviewing the patient's immunization history helps to assess which vaccines are needed for the visit and can help to avoid a missed opportunity to vaccinate. Review can also prevent vaccine administration errors such as giving a vaccine before the recommended minimum time interval. Utilize the most current ACIP Immunization Schedule to determine recommended vaccinations.

It is also important to screen for contraindications and precautions before every dose of vaccine to prevent adverse events following vaccination.

Patients and/or their caregivers may have questions or concerns around

immunizations. This does not necessarily mean they don't want a vaccine, rather they are seeking information. Be prepared to share trusted information with them, as you as a healthcare providers are seen as one of the most trusted sources of information about vaccines

Lastly, have vaccine information statement (VIS) ready to distribute to patient for each vaccine you will be administering. As covered previously, it is federal law to give the patient or their guardian this information prior to vaccinating.



Vaccine preparation is the final step in the cold chain before administration. Handling vaccines with care is equally as important as storing them properly.

-Prepare vaccines in a designated area away from any space where potentially contaminated items are placed.

-Only prepare vaccines when you are ready to administer them.

-Before preparing the vaccine, always check the:
— Vial to ensure it is the correct vaccine
— Expiration date or beyond-use date/time to ensure it has not passed

-Only administer vaccines you have prepared. This is a quality control and patient safety issue and a best practice standard of medication administration.

EQUIPMENT SELECTION

- Use a new, separate, sterile needle and syringe for each injection
  - **Never** administer vaccines to more than one patient with same needle/syringe
- Some syringes and needles have expiration dates. Never use expired equipment.
- Keep varying needle lengths in supply based on patient population
- Needle selection should be based on:
  - Prescribed vaccination route
  - Weight of the patient
  - Injection technique
- A 22-25 fine gauge needle can usually be used for administering vaccines

Injection Site and Needle Size

[§]Alternate needle lengths may be used if the skin is stretched tightly and subcutaneous tissues are not bunched, as follows: a) a ⅝" needle for patients weighing less than 130 lbs (<60 kg) for IM injection in the deltoid muscle **only**, or b) a 1" needle for administration in the anterolateral thigh muscle for adults of any weight.

Subcutaneous (Subcut) injection – Use a 23–25 gauge, ⅝" needle. Inject in fatty tissue over triceps.

Intramuscular (IM) injection – Use a 22–25 gauge needle. Choose the needle length and site as indicated below:

BIOLOGICAL SEX AND WEIGHT OF PATIENT	NEEDLE LENGTH	INJECTION SITE
Female or male less than 130 lbs	⅝[§]–1"	Deltoid muscle of arm
Female or male 130–152 lbs	1"	
Female 153–200 lbs	1"–1½"	
Male 153–260 lbs		
Female 200+ lbs	1½"	
Male 260+ lbs		
Female or male, any weight	1[§]–1½"	Anterolateral thigh

Image obtained from the Immunize Action Coalition's Administering Vaccines to Adults: Dose, Route, Site, and Needle Size

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In terms of equipment selection, always use a new, separate needle and syringe for each injection.

Some syringes and needles are packaged with an expiration date so be sure to consider this when selecting and ordering injection supplies. Never use expired equipment.

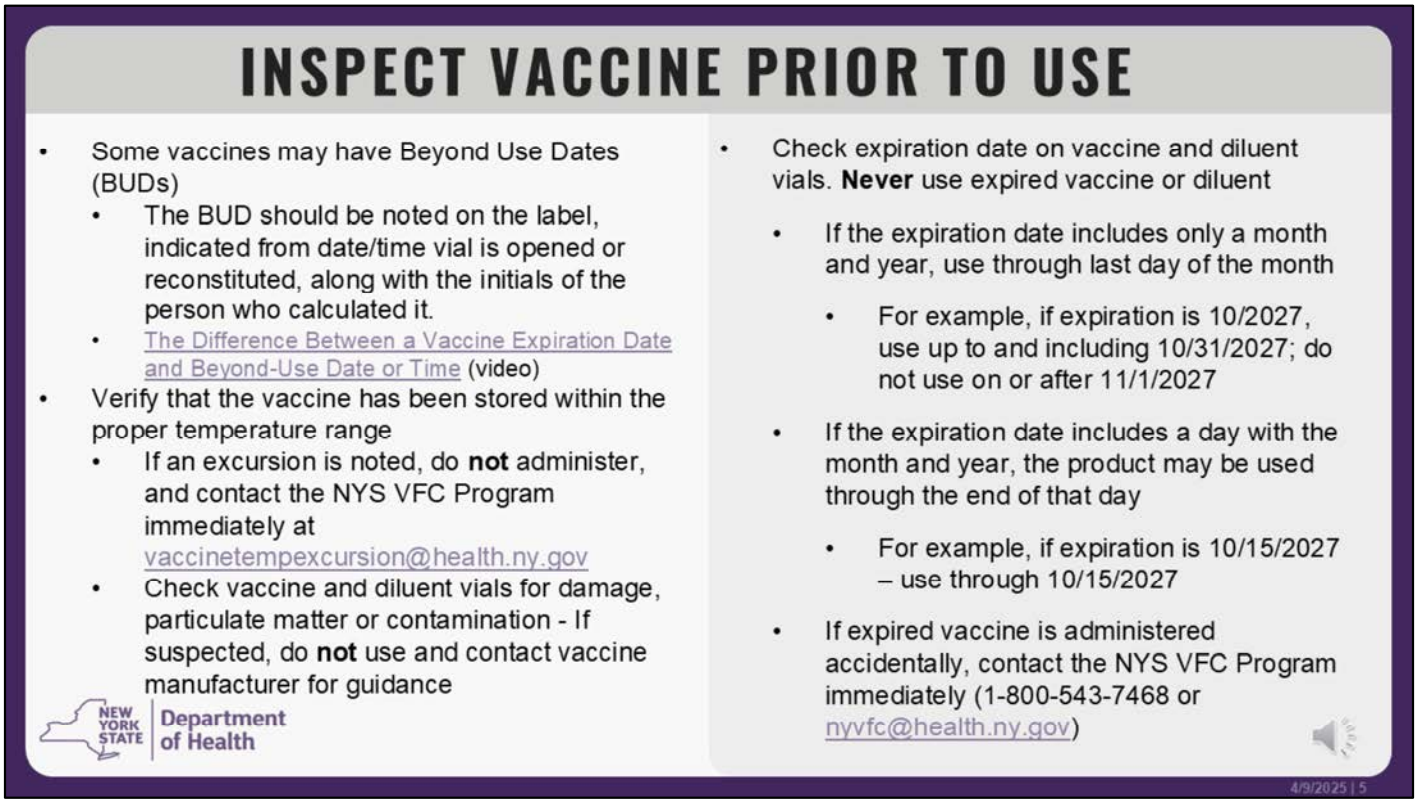
Never administer vaccines from the same syringe to more than one patient, even if the needle is changed.

Each VFC provider should keep a supply of varying lengths of needles and syringes that are appropriate for the patient population they serve.

Needle selection should be determined by the prescribed route, the weight of the individual being vaccinated and the injection technique. This is to ensure that the vaccine is placed in the correct anatomical location for the best efficacy.

A 22-25 fine gauge needle can usually be used for administering vaccines.

Additional information and training on needle selection, administration routes and injection techniques can be found in separate clinical trainings on vaccine administration. See the Resources document provided with these trainings for further information.



The expiration date on each diluent and vaccine vial should always be checked before preparing vaccine for administration. If the expiration date includes only a month and year, use through last day of the month, unless otherwise stated. If the expiration date includes a day with the month and year, the product may be used through the end of that day.

Never administer expired vaccines. If expired vaccine is administered accidentally, contact the NYS Vaccine Program right away.

Some vaccines must be used prior to the expiration date that is printed on the label. This is referred to as the beyond-use date or BUD. Vaccines with a beyond use date usually have a shorter expiration date that begins after the time the vial is opened or reconstituted. For example, for some multidose vials, there may be a specific period for use once they have been punctured or may have a specific number of doses that can be withdrawn. The BUD should be noted on the label, along with the initials of the person who calculated it. Visit the YouTube link on this slide for more information on

distinguishing the difference between a vaccine expiration date and BUD.

Verify that the vaccine has been stored within the proper temperature range; If an excursion is noted, do not administer, and contact vaccinetempexcursion@health.ny.gov immediately.

Vaccine and diluent vials should also be closely checked for damage or contamination prior to use. If damage, particulate matter, or contamination is suspected, do not use and contact the vaccine manufacturer for guidance.

Visit the resources document included with these trainings for more information.

RECONSTITUTION WITH DILUENTS

- Lyophilized (freeze-dried) vaccines come in powder or pellet form
  - Must be mixed with a liquid (diluent) before administration
  - Process known as "reconstitution"

- Diluents
  - Only use the specific diluent provided by the manufacturer for that vaccine as indicated
  - Can vary in volume and composition
    - Some contain antigen for specific vaccine (e.g., DTaP-IPV)
  - Not interchangeable unless specified by manufacturer
  - NEVER freeze diluents
  - NEVER use a stock vial of sterile water or normal saline to reconstitute vaccines
  - NEVER administer vaccine reconstituted with the wrong diluent

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*****If the vaccine is administered accidently with the wrong diluent, the vaccine is not valid. Contact the NYS VFC program 1-800-543-7468 for guidance*****

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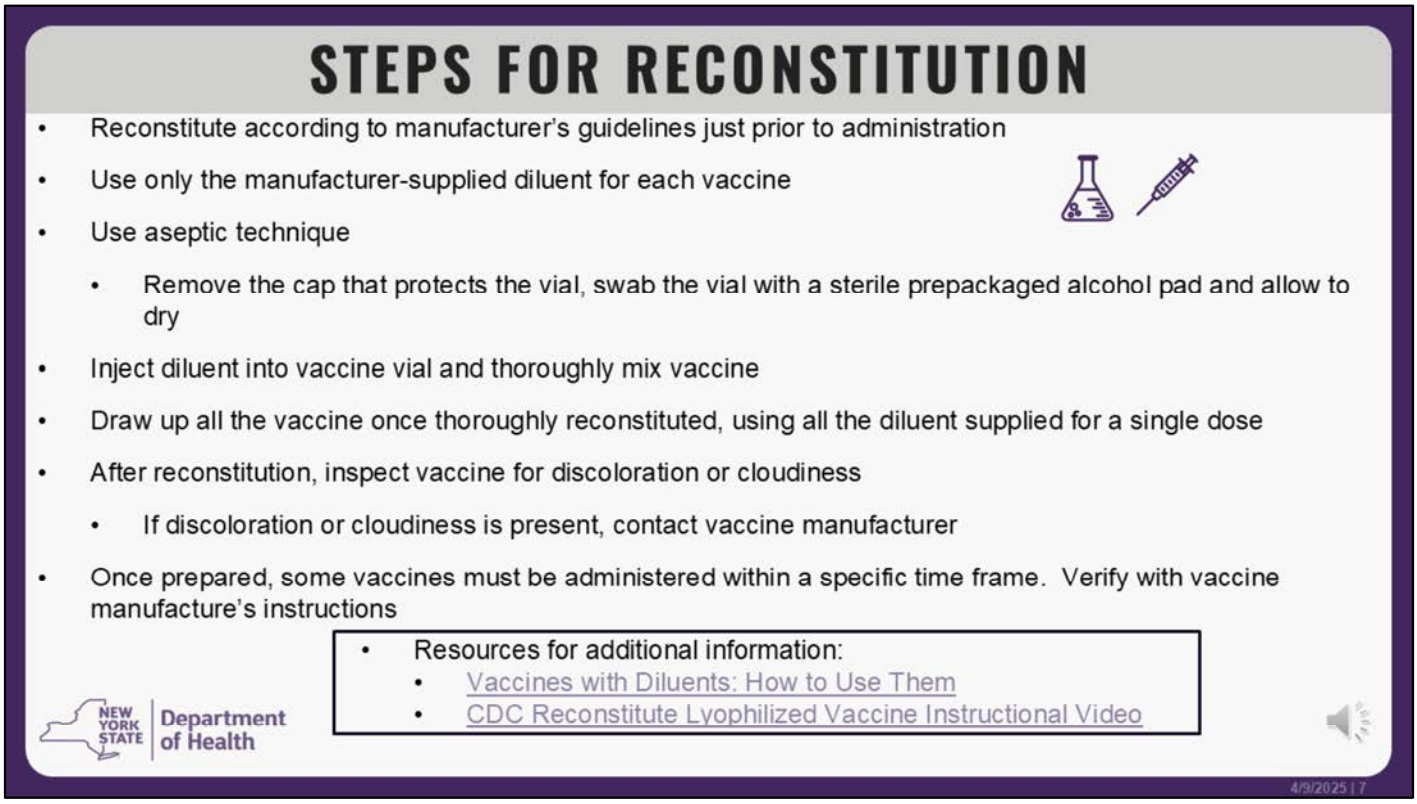
Some vaccines are supplied in a lyophilized (freeze-dried) form that requires it to be mixed with a liquid diluent. This can come in powder or pellet form and must be mixed with a diluent, prior to administration. This process is known as reconstitution.

Each diluent is specific to the corresponding vaccine and can vary in attributes such as volume, sterility, pH, and chemical balance. Some diluents contain antigen for a specific vaccine. Vaccines and diluents are not interchangeable, unless specified by the manufacturer.

Never freeze diluents.

If vaccine must be reconstituted, use only the diluent supplied for that vaccine. NEVER use a stock vial of sterile water or normal saline to reconstitute vaccines. NEVER administer vaccine reconstituted with the wrong diluent. If the vaccine is administered accidentally with the wrong diluent, contact the NYS VFC program for guidance regarding revaccination.



This slide outlines the steps for reconstituting vaccine with a diluent.

Reconstitute vaccine according to manufacturer's guidelines just before administration.

As mentioned previously, use ONLY the manufacturers supplied diluent for that vaccine.

Use aseptic technique by removing the cap that protects the vial, and then swabbing the vial top with a sterile prepackaged alcohol pad and allow to dry

Inject all the diluent into the vaccine vial and agitate the vial to ensure thorough mixing. Consult the specific mixing instructions provided in the product information.

After reconstitution, inspect the vaccine for discoloration or cloudiness. If it appears cloudy or discolored, do not continue use the vaccine, and contact the manufacturer for guidance.

Use all the diluent supplied for a single dose and then draw up all of the vaccine after it is thoroughly reconstituted.
Unless a needle gets contaminated or damaged, it's not necessary to change needles between drawing vaccine from the vial and administering the vaccine.

Follow the links on this slide for resources related to reconstitution and using diluents. These are also listed in the resources document included with these trainings.

FILLING SYRINGES

- Follow standard medication preparation guidelines to draw up doses into a syringe
- Do not draw up dose(s) until just prior to administering
- For most vaccines, agitate vial to mix vaccine thoroughly into a uniform suspension before withdrawing vaccine
  - Inspect vaccine for discoloration or particles that cannot be re-suspended
    - If problems are noted, do not administer the vaccine

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Follow standard medication preparation guidelines when drawing a dose of vaccine into a syringe.

Do not draw the vaccine dose into a syringe until it is to be administered.

Agitate the vaccine vial to mix vaccine thoroughly and obtain uniform suspension prior to withdrawing vaccine. Inspect vaccine for discoloration or particles that can’t be re-suspended.

If problems are noted, the vaccine should not be administered.

FILLING SYRINGES (CONTINUED)

- Caps on unopened vaccine vials function as dust cover, therefore vaccine manufacturers cannot guarantee these tops are sterile, along with the stopper this can be contaminated in the process of removing the cap
  - Once cap is removed, cleanse exposed rubber stopper with a sterile alcohol wipe
  - For multi-dose vials, cleanse the rubber stopper with a sterile alcohol wipe and allow to dry between each dose drawn
- When filling a syringe:
  - Never mix different vaccine products into the same syringe
  - Never combine partial doses from separate vials
  - Never enter a vial with a previously used syringe/needle
  - Never transfer vaccine from one syringe to another

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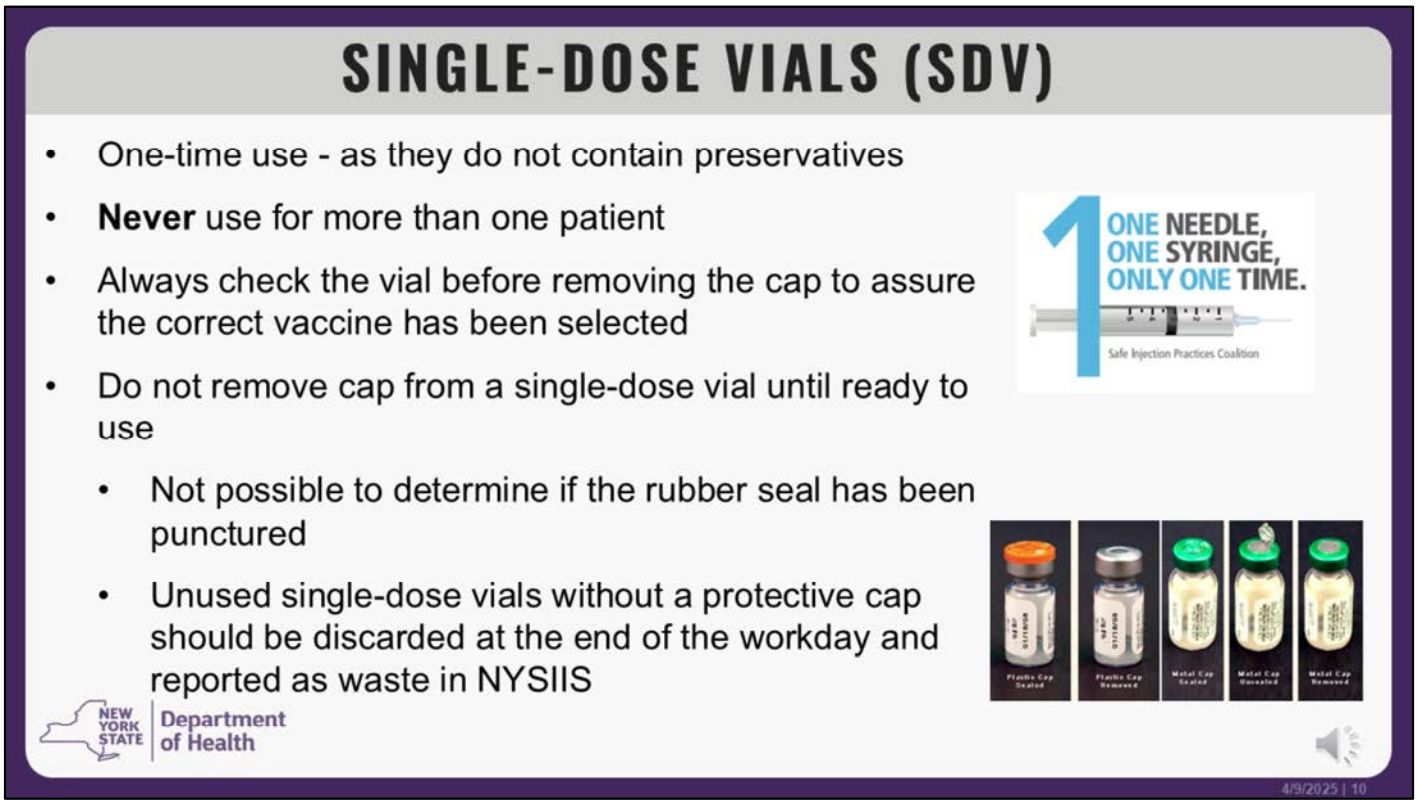
The cap on a vaccine vial functions as dust cover. Once removed, cleanse the exposed rubber stopper with a sterile alcohol wipe, and allow to dry before withdrawing the vaccine. For multi-dose vials, cleanse the rubber stopper each time prior to withdrawing a dose.

When filling a syringe:
Never mix different vaccine products into the same syringe
Never combined partial doses from separate vials
Never enter a vial with a previously used syringe/needle
Never transfer vaccine from one syringe to another



Single-dose vials are designed for one-time use only as they do not typically contain a bacteriostatic agent to preserve the vaccine after opening. Do not save leftover vaccine from these vials. Harmful bacteria can grow and infect a patient.

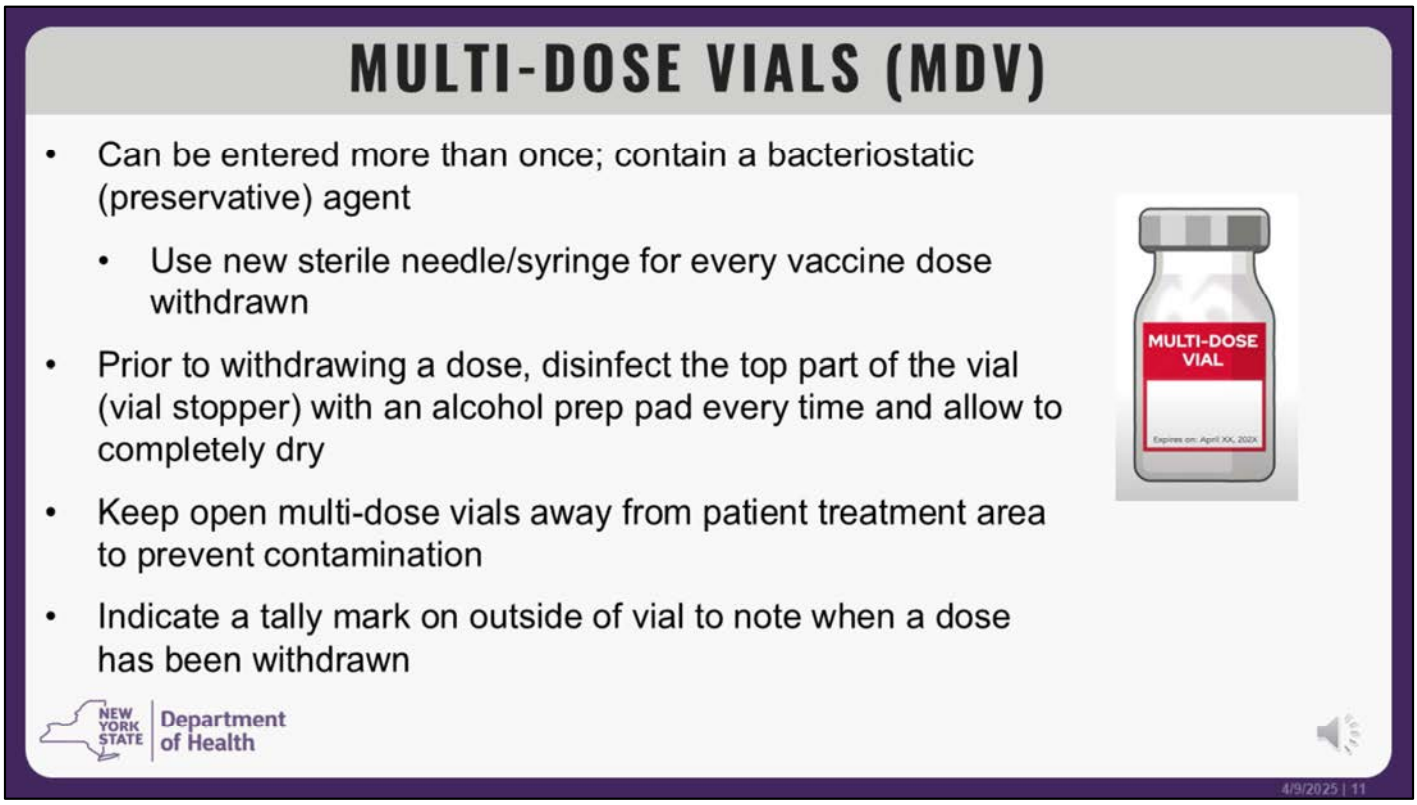
Single dose vials should never be used for more than one patient.

Do not open a single-dose vial until the vial is ready to use. Once the protective cap has been removed, the vaccine should be used because it is not possible to tell if the rubber seal has been entered or punctured by a needle.

Check the vial label before removing the cap on the vial to ensure that the correct vaccine has been selected.

Unused single-dose vials without a protective cap should be discarded at the end of the workday and reported as waste in the New York State Immunization Information System (NYSIIS). See separate trainings on Vaccine Returns and Wastage for more

information.



A multi-dose vaccine vial is a vial of liquid medication that contains more than one dose of vaccine. Here are safety steps to remember when working with multi-dose vaccine:

Multi-dose vials can be used more than once when aseptic technique is followed to draw up multiple doses because they DO contain a bacteriostatic (or preservative) agent. You still need to use a new sterile needle or syringe each time vaccine is drawn from a multi-dose vial.

Multi-dose vials that will be used for more than one patient should not be kept or accessed in the immediate patient treatment area to prevent inadvertent contamination. For the same reason, any multi-dose vial brought into the immediate patient treatment area should be discarded after use.

You should indicate that you have withdrawn a dose by making a tally mark on the outside of the multi-dose vial. This is a good way to tell how many doses are left.

MULTI-DOSE VIALS (CONTINUED)

- The Joint Commission Multi-Dose Vials "28-day rule" does not apply to vaccine vials
- For some vaccines, multi-dose vials (MDVs) can be used until expiration date printed on the vial
  - Ex: inactivated polio vaccine (IPOL) in an MDV can be used through the expiration date on the vial
- For some vaccines, once the MDV has been entered or the rubber stopper punctured, the vaccine must be used within a certain number of days, known as the beyond use date (BUD)
- Calculate the BUD using the time interval found in the vaccine's package insert
  - Ex: for some inactivated influenza vaccine, once the stopper of the MDV has been pierced, the vial must be discarded within 28 days
- When handling MDVs with BUDs, label with:
  - Date vaccine vial was first opened/punctured
  - Initials
  - Calculated BUD
- Never use any vial that has been contaminated or compromised
- Be careful to follow current guidance from the manufacturer and CDC for how long an MDV of COVID-19 vaccine may be used after puncturing the vial. The COVID-19 vaccine MDVs do not contain preservatives and must be used within hours; specific times can vary by product.

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The Joint Commission Multi-dose Vials 28-day rule does not apply to vaccine vials, as it does for other multi-dose medication vials in the healthcare setting. Visit the resources document included with this training for a link which confirms this information.

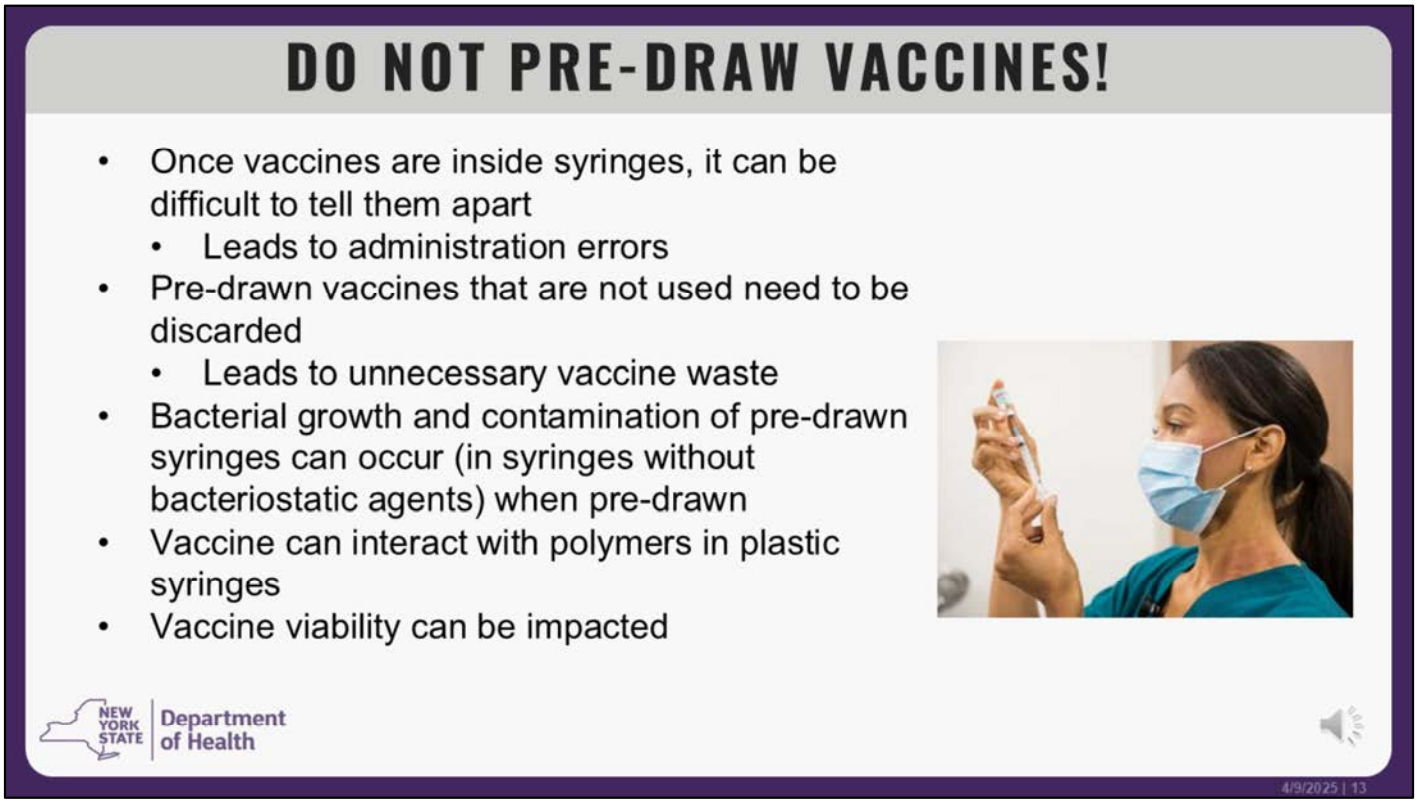
For some vaccines, multi-dose vials (MDVs) can be used until expiration date printed on the vial. For example, inactivated polio vaccine (IPOL) in an MDV can be used through the expiration date on the vial.

On the other hand, for some vaccines, once the MDV has been entered or the rubber stopper punctured, the vaccine must be used within a certain number of days, known as the beyond use date (BUD). The beyond use date is the date or time after which a vaccine should not be used. Beyond use dates always occur prior to the expiration date printed on the vial by the manufacturer, never after. For example, for some inactivated influenza vaccine, once the stopper of the MDV has been pierced, the vial must be discarded within 28 days.

When handling multi-dose vials with BUDs, calculate the BUD using the time interval found in the vaccine's package insert. Label the vaccine with the date the vaccine was opened, the correct beyond use date, and your initials.

As a reminder, never use any vial that has been contaminated or compromised.

Regarding COVID-19 vaccines, be careful to follow current guidance from the manufacturer and CDC for how long a multi-dose vial of COVID-19 vaccine may be used after puncturing the vial. The COVID-19 vaccine multi-dose vials do not contain preservatives and must be used within hours; specific times vary by product.



The Centers for Disease Control and Prevention recommends that providers draw up vaccines only at the time of administration and that providers do not pre-draw vaccines. As mentioned in previous slides, vaccine should be prepared just prior to administration.

Once vaccines are inside syringes, it is difficult to tell them apart. This can lead to administration errors.

Pre-drawn vaccines that are not used must be discarded by the end of the workday, this leads to unnecessary and avoidable vaccine waste.

Most syringes are designed for immediate administration, not for storage. Bacterial contamination and growth can occur in syringes with pre-drawn vaccine that does not contain bacteriostatic agents.

Also, vaccine components may interact with polymers in plastic syringes over time, which can potentially reduce vaccine viability making the vaccine ineffective.

IMMUNIZATION CLINICS

- Pre-drawing vaccines in advance of clinics is not recommended
  - Best practice: use manufacturer-filled syringes for large immunization clinics instead
- If vaccines **must** be pre-drawn:
  - Have separate administration stations for each vaccine type
  - Don't draw up vaccines before arriving at clinic site
  - Don't draw up more than 1 multi-dose vial or 10 doses at once
  - Monitor patient flow closely to avoid drawing up unnecessary doses
  - Vaccinators should administer the doses they have pre-drawn, and discard remaining pre-drawn syringes when the clinic ends

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Image obtained from the SUNY Albany 2021 COVID-19 Vaccine POD

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To re-iterate, vaccine manufacturers do not recommend that vaccines be pre-drawn in advance of vaccination clinics. This is due to many reasons as mentioned on the previous slide.

As an alternative to pre-drawing vaccines, CDC recommends using manufacturer-filled syringes if possible for large immunization clinics.

However, if vaccine must be pre-drawn use the following guidance: at end of workday, any remaining vaccine in pre-drawn syringes should be discarded.

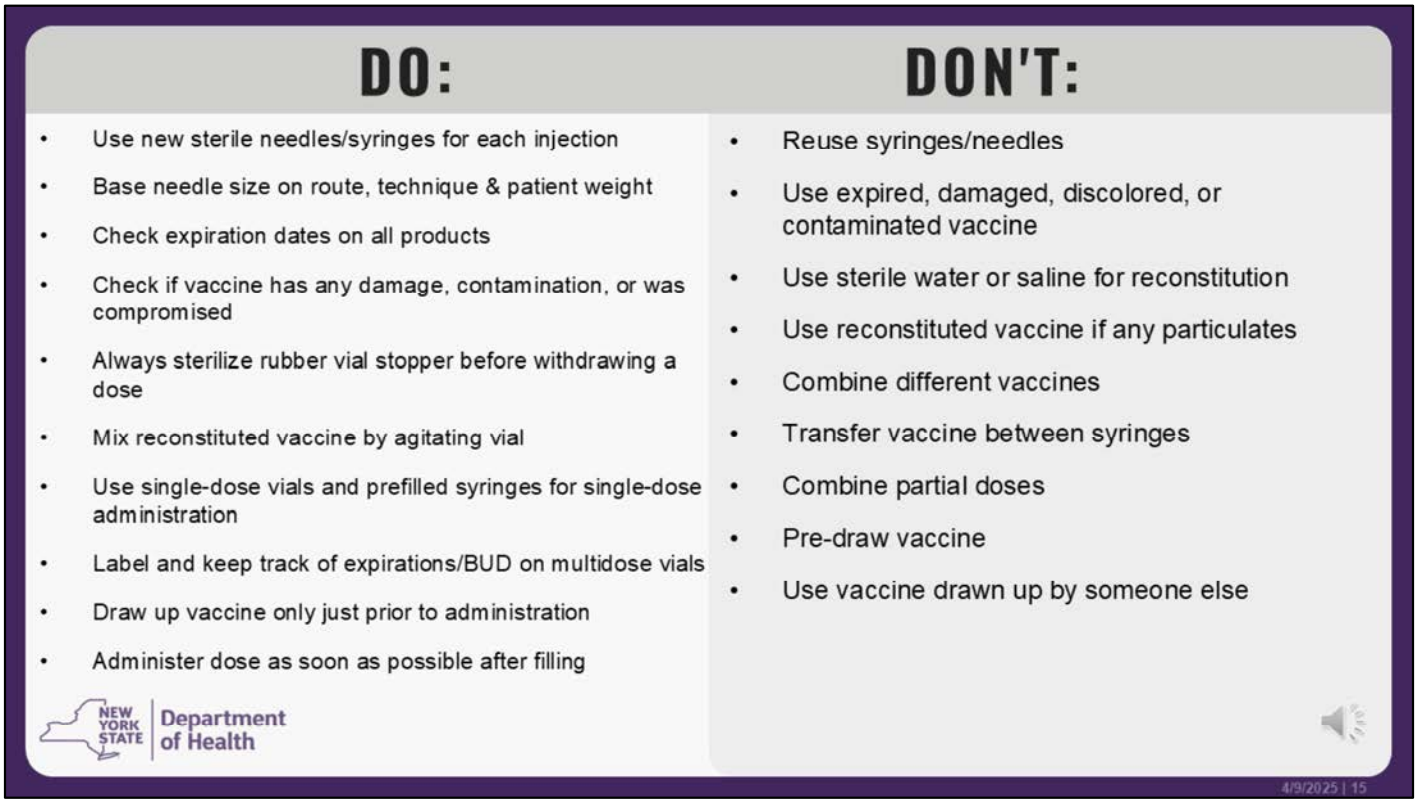
If more than one vaccine type is to be administered, separate administration stations should be set up for each vaccine type to prevent medication errors.

Vaccines should NOT be drawn up prior to arriving at clinic site. Drawing up doses of vaccine hours or even days before a clinic is NOT acceptable.

At clinic site, no more than 1 multi-dose vial or 10 doses should be drawn up at one time by each vaccinator.

Patient flow should be monitored to avoid drawing up unnecessary doses.

Vaccinators should administer whichever doses they have pre-drawn, before drawing up more doses to avoid wastage.



Now we will summarize some of the dos and don’ts of vaccine preparation.
Use a separate needle and syringe for each vaccine injection. Base needle selection on the prescribed route of the vaccine, the size of the individual and the injection technique being used.
DON’T reuse syringes or needles.
Check the expiration dates on needles and syringes as some are packaged with an expiration date.
Inspect vaccine and diluent vials for damage or contamination and always check expiration and beyond use dates.
The cap on top of a vaccine vial functions as a dust cover. Once removed, clean the
exposed rubber stopper with a pre-packaged sterile alcohol wipe.
Never administer expired, damaged, discolored or contaminated vaccine or diluent.
If reconstitution is needed, do not use sterile water or saline, use the manufacturer supplied diluent.
Agitate the vial to mix the reconstituted vaccine thoroughly and obtain a uniform suspension prior to withdrawing each dose.

Inspect the vaccine visually for discoloration, precipitation or if it cannot be re- suspended prior to administration. If problems are noted (e.g., discoloration or cloudiness), do not administer the vaccine.

Use single-dose vials and manufacturer-filled syringes appropriately, as single-dose administration. Discard single-dose vials with dust covers removed and/or manufacturer filled syringes at the end of the workday.

DON'T combine multiple vaccines into one syringe. Vaccines should never be combined in a single syringe except when specifically approved by the US Food and Drug Administration or FDA and packaged for that specific purpose. Most combination vaccines will be combined by the manufacturer.

DON'T transfer vaccine from one syringe to another.

Partial doses from separate vials should not be combined to obtain a full dose. As with transferring vaccine from one syringe to another, this can increase the risk of contamination.

The Centers for Disease Control and Prevention (CDC) recommends that providers draw up vaccines only at the time of administration and administer doses as soon as possible after filling.

DON'T administer a vaccine that someone else has prepared and drawn up. If vaccine is drawn up by one person and administered by a different person, the person administering vaccine cannot be sure about what is in the syringe and its sterility.

Thank you for your participation in this training on vaccine preparation.
As always, any questions can be sent to nyvfc@health.ny.gov.