Immunizations and Infection Control: What Licensing Professionals Need to Know*

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Introduction

Hi, my name is Eva. As a licensing professional, you are responsible for ensuring that child care settings are safe and healthy places for children. You accomplish this by evaluating compliance with applicable laws and minimum standards. During this course, we will talk about the importance of immunizations, misconceptions and myths about vaccines, and how you can talk with providers about the importance of keeping children's immunizations current. In addition, we will talk about various ways child care providers can practice effective contagious disease prevention and how you can support providers in their discussions with parents and families about children's health.

As you inspect centers and homes, you talk with providers about the importance of keeping hazardous materials out of young children's reach. You discuss how to keep indoor and outdoor play spaces safe, and evaluate whether or not child-to-caregiver ratios are met. These are all ways you help keep children safe and healthy. Today we will focus on two additional ways to keeping children healthy: immunizations and infection control.

When you have completed this course, you will be able to:

- Explain how vaccines work,
- Describe how vaccines reduce large-scale occurrences of diseases,
- Define the term "contagious disease,"
- Identify common infections found in child care settings, and
- Describe specific practices that caregivers can implement to prevent disease transmission in child care settings.

Immunizations

Immunizations - also called vaccinations, inoculations, or shots - help protect children and adults from diseases that otherwise would cause serious illness or even death. Vaccines are responsible for reducing the prevalence of many serious diseases that were once common in the United States, including polio, measles, mumps, tetanus, and pertussis, otherwise known as whooping cough. Diseases that are preventable through vaccination are costly to our society, causing unscheduled visits to the doctor or hospital, loss of time at work or school, high financial burdens, and premature deaths.

The Centers for Disease Control and Prevention, or CDC, states the importance of vaccination in no uncertain terms: "Immunization has been called the most important public health intervention

in history, after safe drinking water. It has saved millions of lives over the years and prevented hundreds of millions of cases of disease." By immunizing children, we protect the health of not only the individuals who receive the vaccine, but also those infants who are too young to be vaccinated, those who are not healthy enough for vaccinations, and those children and adults who never received vaccinations. This is known as community immunity.

As a licensing professional, you have probably been asked about immunization by providers, particularly about how providers can talk to parents who question the safety of vaccines. You can help caregivers find resources for imparting this information.

Now let's look at specific information about immunizations, including how they work, the importance of following the recommended vaccine guidelines, and the benefits of vaccinating children.

How Vaccines Work

Typically, children are born with an immune system that is comprised of cells, glands, organs, and fluids that help their bodies fight bacteria and viruses (CDC, 2010). The immune system identifies germs as foreign invaders called antigens, and produces protein-based substances called antibodies to fight those specific germs. Additionally, the immune system remembers the antigens, so if they invade the body again, the antibodies quickly find the attackers and destroy them. This means that when the body is introduced to germs similar to those it has encountered before, it does not become sick. The antibodies are able to resist this new invasion. This is called immunity.

Some parents or providers may wonder, then, why vaccines are needed at all. If the human body has such an effective system to fight antigens, why do children need anything else? The answer is that a child's immune system is unable to create antibodies quickly enough to fight off the disease the first time he encounters it. The child has to be exposed to the germs before his immune system can create and strengthen the antibodies that will protect him against future invasions. Simply put, this means a child must get sick before he is immune to a particular antigen.

Vaccines work by introducing the body to antigens that have been weakened or killed. This allows a person's body to create the necessary antibodies to protect against future invasions without having to experience the disease first. With immunizations, children don't have to get sick to develop immunity.

The Food and Drug Administration, FDA, must license all vaccinations before they are approved for use, meaning each vaccine has been through extensive testing and research to determine its safety and effectiveness. The FDA also determines the best way to administer each type of vaccination.

How Vaccines are Administered

Vaccines are commonly given in four different ways. The appropriate method of giving a vaccine, called a route, depends on the type and purpose of the vaccine. The most effective dosage and route are determined through clinical trials and intensive studies. One way that a vaccination is given is through a spray delivered into the nose. The spray is inhaled and coats the respiratory system. The second way is to inject the vaccine into a muscle. These injections, commonly known as "shots" are mainly given in the arm or upper thigh for a child less than a year old. The third route, also known as a shot, is an injection under the skin in the fatty tissue above the muscle. Lastly, some vaccinations are given by mouth and then swallowed.

Side Effects of Vaccines

Overall, vaccines are very safe and typically produce minor, if any, adverse reactions. In recent years, many have questioned the safety of vaccines, but study after study confirms that it is far more dangerous for children not to receive vaccinations. It is important to note that any medicine, even aspirin, can cause side effects. In the event that a child has a negative reaction, parents and caregivers need to know that most reactions are rare and minor.

The side effects of vaccinations tend to be very mild, including sore muscles of the arm or leg, or temporary pain at the site of injection. Moderate reactions include a low-grade fever that will usually last a day or so. Severe allergic reactions are also possible, but are very rare. Some symptoms of severe allergic reactions include seizures, breathing difficulties, and wheezing. If parents or caregivers suspect that a child is having a severe allergic reaction to a vaccine, or any other severe allergic reaction for that matter, they should seek emergency medical attention immediately.

The CDC points out that is it sometimes difficult to determine if a reaction was actually caused by a vaccine. Any serious reaction that a vaccine may cause could also be caused by something else. For instance, Sudden Infant Death Syndrome, or SIDS, was once thought by some to be caused by a vaccine. Some studies linked SIDS with the DTP vaccine, an earlier version of the Diphtheria, Tetanus, and Pertussis vaccine that is used today. In these studies, SIDS deaths occurred one or two days after the vaccine was given to some children. However, when researchers studied SIDS and the DTP vaccine more closely, they found that babies who did *not* receive the vaccination were just as likely to be affected by SIDS as those who were vaccinated. Since then, prevention measures, like putting infants to sleep on their backs and eliminating toys, stuffed animals, and extra bedding from cribs, have been credited for the dramatic reduction in SIDS deaths.

Misconceptions and Myths

Not everyone recognizes the benefits of vaccinations. Some people object to vaccines due to religious reasons. Others are concerned about safety issues, or question whether the diseases for which vaccines are given still pose a threat today. Because so much misinformation about

vaccines exists, it is important for licensing professionals to understand the facts and benefits of immunization.

One common myth is that today's reduction of disease is due to improved hygiene and sanitation - not vaccination. Yes, sanitation systems have improved tremendously, as have nutrition and hygiene practices. Yet with all these advances in society, there is no factor that has had a greater direct impact on disease reduction than vaccines have had. Since the licensure and widespread use of the measles vaccine in 1963, measles cases have dramatically declined. In fact, measles cases virtually disappeared in the United States around 1993, and only reappeared when immunization coverage rates fell a few years ago. If the decline in diseases like measles was truly due to reasons other than vaccination, one would expect that *all* diseases would have dramatically declined or disappeared around the same time. This has not been the case. For example, the number of occurrences of pneumococcal disease only began to drop after the introduction of a vaccine around the year 2000.

Another myth is that vaccines can lead to disease or cause disorders like autism. Researchers have not found a connection between autism and vaccines, and the study that initially started this debate has now been retracted. As for the idea that vaccines can cause disease, like the common belief that the flu shot can cause influenza, this simply isn't true. The flu shot does not contain a live virus, so children and adults cannot get the flu from the vaccine. Additionally, some people do not develop immunity to a disease, even after a vaccine has been given, so they may still contract the illness. Some reasons for this include:

- Not completing all recommended doses in a vaccine series
- Not getting vaccinated at an age-appropriate time, or
- Not getting booster vaccinations for diseases whose antigens change over time.

Immunization Schedule

The CDC has outlined an immunization schedule for both children and adults. This schedule is based on age and recommended vaccine guidelines. All vaccines are given to the youngest age group at risk for the disease.

Some vaccines last a lifetime, while others do not. For some vaccines, the effectiveness of protection decreases over time, and multiple doses or booster immunizations are necessary. Sometimes, the germ causing a specific disease changes and requires people to get additional vaccinations in the future. Immunity develops over time with exposure; therefore, multiple doses of certain vaccines are necessary to ensure proper immunity is developed.

Most children receive all their basic vaccinations by 18 months of age and then receive boosters as they get older. However, appointments are sometimes missed or vaccination schedules interrupted for some other reason. It is important to know that partial immunizations may not provide protection against disease. A catch-up schedule is set by the CDC for those whose vaccinations have been delayed. Children who start receiving immunizations after 12 months of

age must follow a special schedule. Under-immunized children increase the risk of exposure for children who are still too young for vaccinations.

A good resource for caregivers to use with parents is the *Immunization Dose Counter* available as a free publication from the American Academy of Pediatrics, or AAP**.** This is a reference for parents to determine age-appropriate vaccinations for infants, toddlers, and older children. It has a sliding panel to match the child's age with any vaccines that are due, as well as a copy of the *Recommended Childhood and Adolescent Immunization Schedule*.

It is important that adults in a child care setting also maintain an appropriate vaccination schedule. As we've stated, many vaccines are completed in childhood, but several need boosters throughout adulthood. Encourage providers to consult with their health care professionals to determine if they are adequately protected against disease.

Benefits

We've discussed and debunked many of the beliefs about risks associated with immunization, and we've talked about how a vaccine protects a child from disease. Here are some other important facts from the CDC to remember about the benefits of immunizations:

- Children who are vaccinated protect others who are unable to be vaccinated. Some children are unable to receive or respond to certain vaccines because of medical reasons, and the immunity of the adults and children around them is their only protection from certain diseases,
- Children who are vaccinated help protect future generations from diseases. If enough parents fail to immunize their children, diseases that were once greatly reduced or eradicated will return and pose serious threats once again, and
- Children who are vaccinated can ultimately contribute to a world-wide elimination of deadly diseases. This has occurred with smallpox, and is close to occurring with polio and measles.

Now that we've covered the importance of immunizations, let's talk about another key factor in keeping children healthy: infection control. As licensing professionals, you are responsible for inspecting child care settings and ensuring that providers follow all state standards related to health and safety. Let's look at reasons why such standards exist, and how you can help providers understand the importance of preventing and managing the spread of contagious diseases.

Infection Control

First of all, let's talk about the difference between an infectious disease and a contagious disease.

- An **infectious disease** is caused by germs that enter the body, such as fungi, bacteria, a parasite, or a virus. These germs grow and multiply in the body and make a person ill.

Even though the person is ill, the disease may not be contagious. Lyme disease is an example of an infectious disease that is not contagious. It comes from a bite from an infected tick, and cannot be contracted from contact with a person with Lyme disease.

- A **contagious disease** is an infectious disease that is spread through contact from one person to another. The disease is spread through contact with body fluids directly from a sick person or from contaminated items that the sick person has touched or soiled. The most common modes of contamination are sneezing, coughing and bleeding. The common cold, mononucleosis, and athlete's foot are examples of contagious diseases.

When we talk about "infection control" in this course, we will primarily be referring to preventing the spread of contagious diseases, particularly in child care environments. When children are grouped together, the risk of germ-spreading is increased. Infants and toddlers are at an elevated risk of contracting contagious diseases, because they constantly put items in their mouths. While the spread of contagious diseases cannot be entirely eliminated in child care settings, effective infection control practices will certainly reduce the risk.

Common Infections

Let's look at some common infections found in child care settings, and how they are spread.

- **Respiratory illnesses** mainly affect the upper respiratory system consisting of the nose, mouth, sinuses, and throat. A few examples of respiratory illnesses are the common cold, whooping cough, and influenza. Respiratory illnesses are spread by droplets released during coughing, talking, or sneezing. Some viruses, including influenza, may also be spread by direct contact with contaminated objects.

- **Ear infections** are infections of the ear, commonly the middle ear, and are associated with the tubes between the middle ear and the throat. The tubes become blocked and infected with germs that cause pain and fever, and make it hard for a child to hear. Respiratory illnesses can increase the possibility of an ear infection in young children.

- **Gastroenteritis and diarrhea** occur due to a variety of underlying causes, including bacteria, viruses, and even parasites such as pinworms. Gastroenteritis, also known as the stomach flu, is the inflammation of the stomach and intestines. It can cause nausea, vomiting and diarrhea. Both diarrhea and gastroenteritis are spread through direct and indirect means, such as touching contaminated surfaces. Infectious diarrhea is the second most common type of infection among children in child care (Roberts, et al., 2000).

- **Skin and eye infections** include impetigo, chicken pox, lice, ringworm, scabies, hand-foot-and-mouth disease, and conjunctivitis, commonly called pink eye. They are spread by direct and indirect means. Some are vaccine-preventable; others are prevented through good hygiene and health habits.

These common infections can be dangerous to children, especially those with compromised immune systems, but in most children their effects are moderate. There are also some contagious diseases found in the child care setting that can be very serious, including:

- **Hepatitis A**, which is a liver disease caused by a virus. It spreads through the ingestion of fecal matter, which can occur following close contact with others or through ingesting contaminated food or drinks. Hepatitis A is a vaccine-preventable disease.
- **Hepatitis B**, which is also a liver disease caused by a virus. It spreads through contact with blood and body fluids from an infected individual. Infants can be born with Hepatitis B. Hepatitis B is a vaccine-preventable disease.
- Other serious diseases to be mindful of in the child care setting are **HIV/AIDS, Hepatitis C, Bacterial Meningitis**, and **MRSA**, which is short for methicillin-resistant Staphylococcus aureus, which is a strain of staph bacteria that has become resistant to common antibiotics.

Ways to Prevent Infections

Many minimum standards were created with the intent to prevent germ-spreading and contagious disease transmission in child care settings. These standards provide specific guidelines about diaper changing, cleaning and sanitizing, food service, excluding sick children from care, and required staff and child vaccinations. While child care providers are familiar with these practices, they may not understand how to effectively implement the standards as a part of everyday care. Let's look at some ways that you can help providers achieve the healthiest environments possible.

Hand Hygiene

Hand washing is the most important intervention tool in infection control. This message cannot be emphasized enough. Hands easily allow germs to enter the body when a person touches contaminated items, then touches his eyes, nose, or mouth, or broken skin. Best practices for when children and caregivers should wash their hands include:

- Every day when they arrive at the child care facility, or when moving from one group of children to another,
- Before and after eating, handling food, or feeding children, including bottle feeding infants,
- Before and after giving medication to any child,
- Before and after playing in water that is used by more than one person,
- After diapering, using the toilet, or helping a child use the toilet,

- After handling bodily fluids, including blood or mucous,
- After playing in sandboxes,
- After feeding or handling pets or other animals, and,
- After cleaning or handling garbage and uncooked food – especially raw meat and poultry.

The following steps are the recommended procedure for proper hand washing.:

Step 1 - Turn on warm water, when possible. The temperature should be between 60 and 120 degrees Fahrenheit, and never more than 120 degrees Fahrenheit,

Step 2 - Make sure disposable towels are available before getting hands wet,

Step 3 - Wet hands,

Step 4 - Apply liquid soap,

Step 5 – Lather hands from the wrists to the fingertips, concentrating on areas between the fingers, under the fingernails, under any jewelry, and on the backs of hands,

Step 6 – Scrub for at least 10 to 15 seconds. Ask caregivers to try singing "The ABCs" or "Twinkle, Twinkle Little Star" twice, quickly,

Step 7 – Rinse hands completely,

Step 8 – Dry hands using a disposable paper towel,

Step 9 – Turn off the water using a disposable paper towel, and

Step 10 – Throw the paper towels away in a lined trash container.

The same hand washing procedure used by adults should be used for washing children's hands, including infants' and toddlers' hands. The use of commercial hand sanitizers is not recommended as a replacement for frequent, proper hand washing. Hand sanitizers may not be as effective for disease prevention as regular hand washing. Also, hand sanitizers can be toxic if ingested by very young children. Caregivers should try to avoid using hand sanitizers with infants, toddlers, and any child whose hands are likely to end up in her mouth.

This video illustrates proper hand washing procedure in the child care environment.

[VIDEO: HAND WASHING]

Hair and Body Hygiene

Proper body and hair hygiene help prevent the spread of head lice and other skin infections that can easily be transmitted between caregivers and children. Personal care items, such as combs, brushes, hats, scarves, hair ribbons, bedding or towels, should not be shared.

Child care providers may find it helpful to have a policy that requires regularly checking children's heads, even infants' and toddlers', for any sign of head lice.

Coughing and Sneezing

Coughing and sneezing contaminate the air and surrounding surfaces. If adults or children cover their coughs or sneezes with their hands and then touch surfaces such as toys, doorknobs, or eating utensils, germs can easily be spread to others. Recommend that providers teach children to sneeze or cough into a tissue and dispose of it in a trash container. Individuals should wash their hands after sneezing or coughing, whether into a tissue or into their hands, to remove germs from hands and fingers. Providers can serve as an example and model this good hygiene for children in care.

Cleaning vs. Disinfection

Any person familiar with child care will know that the words "cleaning" and "disinfecting" are used often. What many do not understand, however, is the difference between cleaning, sanitizing, and disinfecting. Here is a breakdown on the differences:

- Cleaning – Using water and a soap or detergent to physically remove germs, dirt, and soil from the surface of an object, without necessarily killing germs.
- Disinfecting – Using a chemical to kill germs on surfaces or objects, without necessarily cleaning the surface or removing the germs.
- Sanitizing - Using a product to kill and/or remove some germs from an object or surface, lowering the number of live germs to a safer level.

Infants and toddlers are sometimes thought of as being in a sensorimotor stage of development, which means they explore the environment using their senses. Mouthing is one way that infants and toddlers explore the environment and learn. Since infants and toddlers do not understand the risk of spreading germs by mouthing objects, it is important for their caregivers to understand the risks and take steps to protect young children from illness by keeping the learning environment clean and sanitary. Helping caregivers understand their crucial role in cleaning and disinfecting will in turn help young children stay healthy.

Keeping child care environments sanitary is the key to preventing the spread of contagious illnesses. Supervision is the primary strategy for keeping infants and toddlers safe and healthy, so caregivers should always observe children during play, and try to prevent inappropriate instances of mouthing, such as sharing pacifiers. When mouthing does occur, and it inevitably will,

caregivers should wait for the child to finish exploring the object and then remove the object from play until it can be properly sanitized. Ask caregivers to ensure that all materials selected for infant and toddler classrooms are easy-to-clean and, if possible, non-porous. Plastic toys and materials are much easier to safely sanitize than porous materials like wood.

Bacteria and viruses are not only spread through mouthing, but they can enter the child care environment on the hands, bodies, and even clothing and shoes of children and caregivers. In order to prevent illness, caregivers need to clean and properly sanitize all objects and surfaces in the environment on a regular basis.

We talked about the definition of sanitizing, but what does it mean to "properly sanitize" objects and surfaces in infant and toddler environments? The following procedure describes the best way to kill and remove germs on objects and surfaces:

Step One - Wash the surface with soap and water,

Step Two - Rinse with clean, clear water, ensuring that all soap residue has been removed from the surface,

Step Three – Spray the surface with a disinfecting solution. Let the solution remain on the surface for at least two minutes, then rinse with cool water if the item is likely to be mouthed, and

Step Four – Allow the surface to air dry. If it is not possible to let the object air dry, then wipe the surface with paper towels after the solution has remained on it for at least two minutes.

Providers should ensure that any sanitizing and disinfecting solutions used in child care settings are mixed properly according to guidelines found in minimum standards and are always out of the reach of children.

Sick Children

All children will inevitably become ill at some point. Most of these illnesses are mild, but all child care providers must be prepared to recognize and respond appropriately to minor illnesses.

Sometimes it is easy for caregivers to identify a child who is not feeling well. Generally, sick children are not as active, withdraw from activities, and become cranky or irritable. They may have eye discharge, diarrhea, fever, coughing, or stomach pain. Other times, children give little or any outward signs of illness. Minimum standards state guidelines for providers to use when deciding whether or not to exclude a child from care based on a suspected illness.

Unless licensed to provide get-well care, providers should not admit children into or allow children to stay in care if:

- The illness prevents comfortable participation in activities, including outdoor play,
- The illness results in a higher level of care than the caregiver can safely provide,

- The child's oral temperature is above 101 degrees Fahrenheit, and other behavioral changes or signs of illness exist,
- The child's armpit temperature is above 100 degrees Fahrenheit and other behavioral changes or signs of illness exist,
- The child shows symptoms and signs of possible severe illness, such as lethargy, abnormal breathing, uncontrolled diarrhea, two or more vomiting episodes, or other signs that the child may be severely ill, or
- A health care professional has diagnosed the child with a communicable illness, and no medical documentation has been presented that indicates that the child is no longer contagious.

Child care providers may find that parents are reluctant to pick up their children when they are sick, or to keep them home until they are well. It is important for providers to fully explain their illness policy before the child is enrolled, since some families may not read all written documentation they are given. It is also vital, though, that copies of this policy to be handed out again frequently, particularly during cold and flu season, which is typically during the fall and winter months. Child care providers should help parents understand that keeping children home when they are sick is crucial part of preventing the spread of infectious disease. Parents must recognize their responsibility for taking a sick child to their health care professional and for reporting contagious diseases to the child care provider. Licensing staff can work with providers to help them understand the importance of communicating with parents about the value of these measures in controlling the spread of illness.

Bringing It All Together

Current immunizations and effective infection control practices are two very important ways to keep children safe from diseases. By helping providers understand their invaluable role in these areas, licensing professionals support not only state standards, but also the overall health and well-being of young children in care.

In this course, we have talked about how to keep infants and toddlers healthy, as well as what providers can do when children become ill. Here are the major messages that we would like for you keep in mind during your next inspection:

- All vaccines for all children must be up to date. Licensing professionals can help make certain this happens,
- The spread of disease can be limited with the right health practices. Proper hand-washing plays a major role in controlling the spread of disease, and
- You need to check that caregivers are aware of signs of illness and follow all policies and procedures concerning exclusion of a child who is ill.

Thank you for your attention, and for your commitment to ensuring that our most vulnerable children receive the best possible care.

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