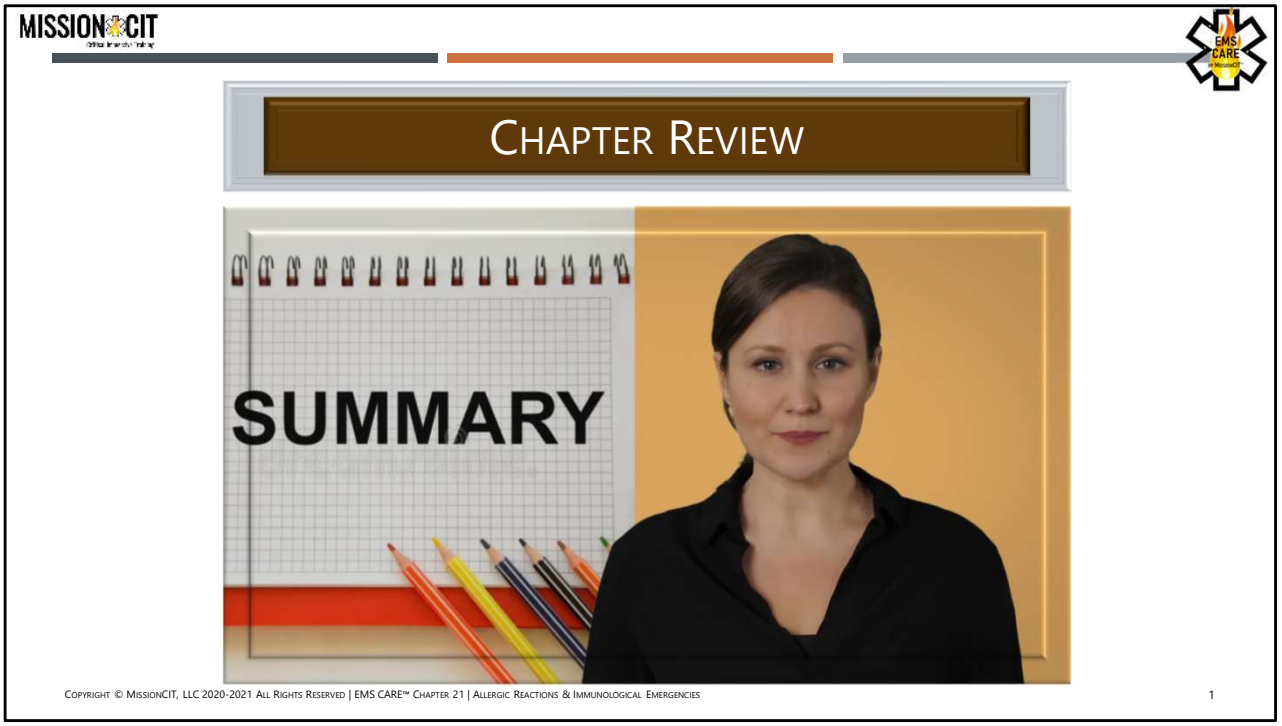


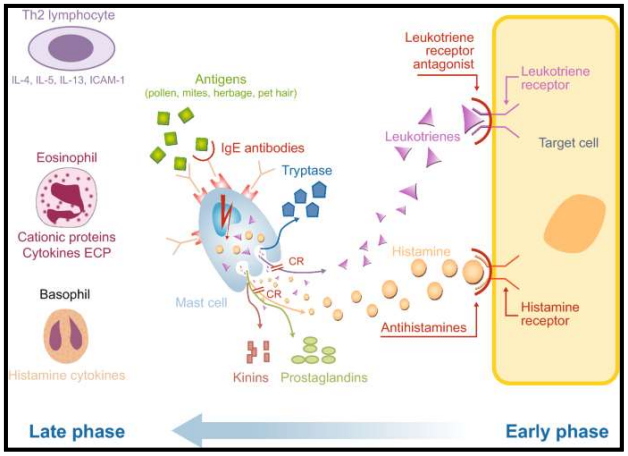
Thank you Justin, and I hope you found the video using ampoules and vials for Epinephrine administration helpful.

We have now reached the time for this chapter review. We will quickly recap each of the five lessons to help you prepare for the following quiz.

Good studying.

Chapter Review | Lesson 1

- Immune system protects from foreign objects
- Over activity causes allergies
- Increased capillary permeability, vasodilation, bronchoconstriction, and increased mucus production
- Symptoms include sneezing, blocked nose, itchiness, wheezing, cough, and more



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In the first lesson, we explored the pathophysiology of the immune system and allergies.

The core function of an immune system is to protect the body from the onslaught of foreign objects. To do this, it uses white blood cells, antibodies, lymphatic system, spleen, thymus, and bone marrow. The speed and intensity of all these parts depend on the perceived threat from a potential allergen.

Sometimes though, the immune system over-reacts to a foreign object, causing autoimmune diseases and allergic reactions. The fundamental reactions of the immune

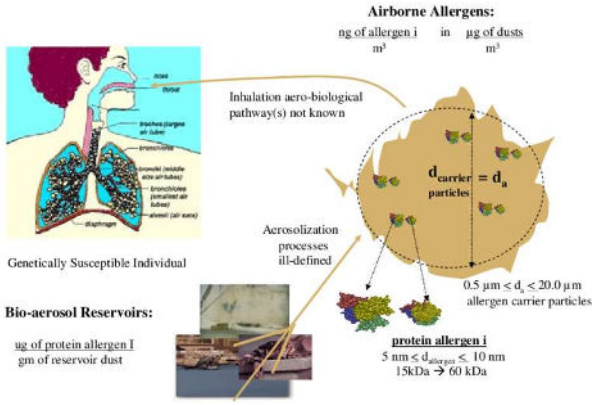
system include,

- Increased capillary permeability is the process by which large molecules from capillaries are lost in the interstitial fluid.
- Vasodilation is the process by which the blood flow to an area is increased, and in turn, it leads to reduced blood flow in other parts of the body.
- Bronchoconstriction is when the airways constrict, thereby reducing the flow of air to the lungs.
- And finally, increased mucus production.

These processes cause sneezing, blocked nose, itchiness, wheezing, cough, rashes, swollen body parts, stomach pain, watery eyes, and cracked lips.

Chapter Review | Lesson 2

- Food is the most common allergens and symptoms are hives, itching, nausea, stomach pain, vomiting, and diarrhea
- Medication allergies – hives, rash, anaphylaxis, swelling, wheezing, watery eyes, and runny nose
- Plant allergies – watery eyes, sneezing, runny nose, fatigue, and sinuses
- Chemical allergies – red skin, scaly patches, blisters, swelling, cracked skin
- Insect bites and stings from wasps, yellow jackets, honeybees, hornets, and fire ants cause anaphylaxis, rashes, and swelling



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Moving on, we explored the common allergens and their possible allergy symptoms in the second lesson.

Food is one of the most common allergens. And its symptoms include a tingling or itching feeling in the mouth, hives, itching, eczema, swelling on one or more parts of the body, wheezing, nasal congestion, difficulty breathing, diarrhea, nausea, vomiting, abdominal pain, and dizziness.

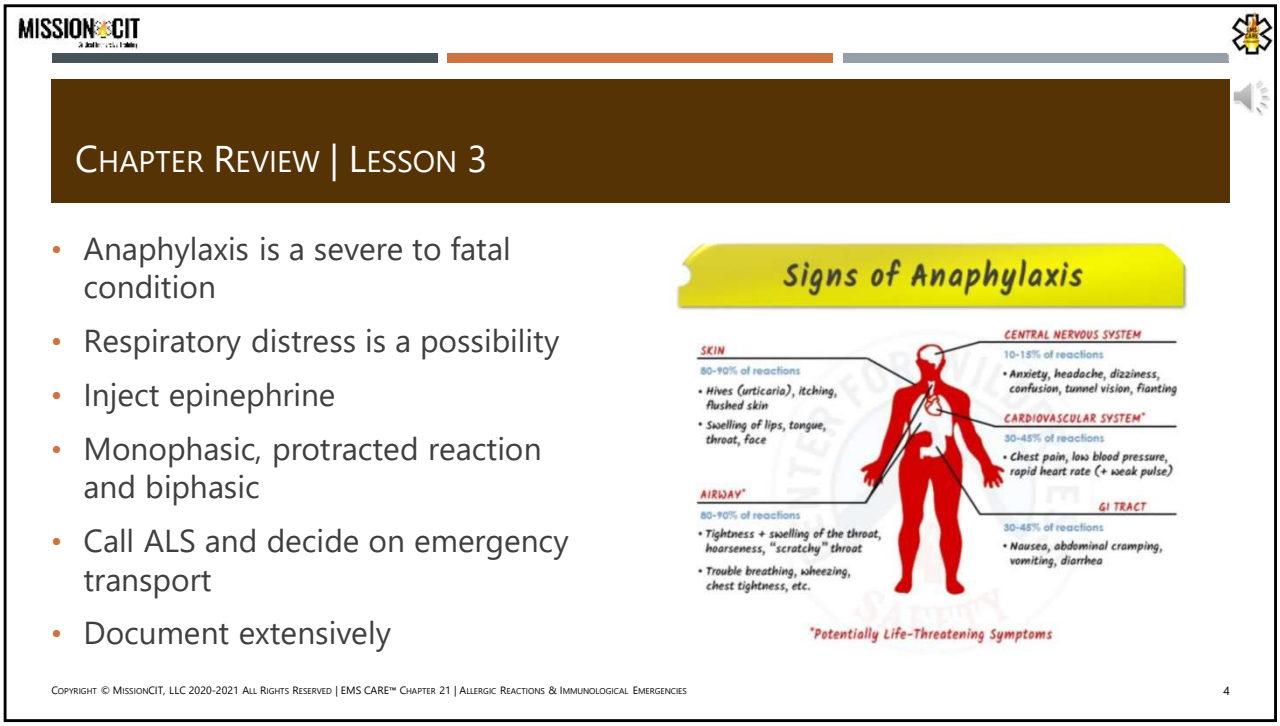
Medications are another common source of allergens, and its symptoms are hives, rash, and fever. Sometimes, medications can also lead to Anaphylaxis. Swelling,

wheezing, watery eyes, and runny nose are other less-likely symptoms associated with medication allergies.

Plant allergies are also widespread. It is also known as allergic rhinitis or hay fever and is caused by pollen. Its symptoms are itchy and watery eyes, sneezing, runny nose, coughing, fatigue, and sinusitis.

Chemicals are found in everyday items like shampoos, cleansers, moisturizers, hair dyes, soaps, and other personal care items. They may cause red skin, scaly patches, blisters, burning or itching sensation, swelling of some body parts, hives, sensitivity to the skin, and cracked skin.

Finally, you may encounter severe allergies from insect bites and stings of wasps, yellow jackets, honeybees, hornets, and fire ants, leading to Anaphylaxis, while mild to moderate reactions including swellings and rashes.



Anaphylaxis is a potentially fatal multi-organ response by the body's immune system that causes it to go into a state of possible shock.

Some common symptoms are flushed or pale skin, low blood pressure, constriction of airways, swollen tongue or throat, wheezing and trouble breathing, including shortness of breath, weak and rapid pulse, dizziness and fainting, nausea, vomiting, and intense diarrhea.

Respiratory distress is a likely symptom of Anaphylaxis. There are three patterns or reactions of respiratory distress: monophasic, protracted, and biphasic. Out of

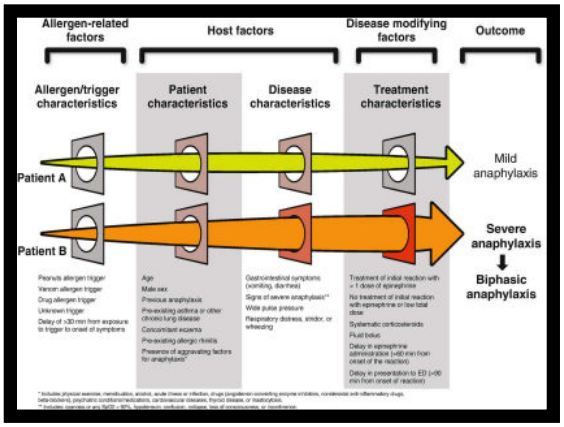
these, monophasic is the most common type, and it peaks within 30 minutes to one hour after the first symptom of allergy occurs. A protracted reaction can last from hours to days, and these patients require treatment at the earliest. Biphasic is relatively rare, and as the name suggests, the second phase occurs within 72 hours after resolution of the anaphylaxis symptoms.

As soon as you see a patient with Anaphylaxis, evaluate the state. If you think the patient could die quickly, have your partner call Medical Support or ALS immediately. In the meantime, inject Epinephrine on the thigh's lateral side once every five to 10 minutes until the patient improves.

Once the patient is stable, understand the cause of the allergy, and document the same, it can help the hospital staff provide the most appropriate care.

Chapter Review | Lesson 4

- Assess the scene
- Look for obvious signs like bites and stings
- Inject epinephrine if patient is serious
- Call ALS and arrange emergency transport if needed
- Stabilize the patient with C A B
- Document extensively
- Watch out for pediatrics and geriatric patients



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In the next lesson, we talked about how to size-up and handle these immunological emergencies. First off, evaluate the scene and make sure it is safe for you to enter. Next, assess the patient looking for any bites or stings. If possible, talk to the patient and other family members and friends to get an idea of what happened.

If you think the patient is suffering from Anaphylaxis, inject Epinephrine immediately, and call for ALS if the condition is life-threatening. In the meantime, check the circulation, airways, and breathing, and provide CPR if you have to. Also, decide if the patient requires

emergency transport.

Once the patient is stable, gather as much information as possible, and document all of it.

Keep an extra watch over pediatric and geriatric patients, as both have compromised immune systems and are more susceptible to allergies. Also, the reaction could be more intense in the case of seniors.

Chapter Review | Lesson 5

- Epinephrine is a medication used to treat severe allergic conditions
- Dosage depends on the patient's weight. 0.3 mg for patients > 66 lbs and 0.15mg for patients < 66 lbs
- Repeat every 5-15 minutes as needed
- Use auto-injectors if available
- Know how to use Vials and Ampoules too. Be sure to practice!
- Inject in lateral side of the thigh through clothes



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In this last lesson, we talk about Epinephrine, a medication used to treat severe conditions like Anaphylaxis, asthma, cardiac arrest, blood coagulation disorder, and more. It improves breathing, stimulates the heart, reverses hives or allergic reactions, reduces swelling, and raises blood pressure. It also dilates the bronchioles, and in the process, improves airflow to the lungs. The effects of this medicine are rapid to combat the severe condition, but its effects don't last long

Since this is such a life-saving drug, EMTs always carry it and are allowed to administer it. You can inject 0.2 to 0.5

mg of Epinephrine in the lateral thigh muscle once every 5 to 10 minutes. If Anaphylaxis is exceptionally severe, the frequency can be increased.

Epinephrine is best administered through auto-injectors as it contains fixed doses, depending on the patient's weight. For example, if a patient weighs over 30 kilograms or 66 pounds, 0.3 milligrams is administered. For those weighing from 15 to 30 kilograms, 0.15 milligram is administered.

Epinephrine auto-injectors are designed for self-use. If you ever get into a situation where you have to assist a patient in administering it, ask the patient or the care provider to safely remove the auto-injector from its package, remove the blue safety cap, and hold it in the fist and inject in the lateral thigh. While injecting, there should be no movement.

It can be injected on the bare skin or through clothes.

With this, we have come to the end of the chapter review, so please proceed to take the quiz. Remember, you need a score of 75% to pass this chapter and get credit for it.

Good Testing!