

Common Childhood Respiratory and Throat Diseases Curriculum



Every effort has been made to trace the ownership of copyrighted material and to make full acknowledgement of its use. If errors or omissions have occurred, they will be corrected in subsequent editions, provided that notification is submitted in writing to the publisher.



© 2024, Realityworks, Inc. All rights reserved.

2709 Mondovi Road
Eau Claire, WI 54701 USA
800.830.1416
+1.715.830.2040
www.realityworks.com

1072687-01

Table of Contents

Table of Contents	3
Author	4
Curriculum Structure.....	4
Lesson Structure.....	5
Lesson One – Common Cold	6
FOCUS: Common Cold	7
LEARN: Common Cold Lecture and Demonstration	10
REVIEW: Common Cold Case Study and Scenarios	17
Lesson Two – Bronchiolitis	20
FOCUS: Bronchiolitis.....	21
LEARN: Bronchiolitis Lecture and Demonstration.....	24
REVIEW: Bronchiolitis Matching Activity and Scenarios.....	30
Lesson Three – Strep Throat	33
FOCUS: Strep Throat Symptoms.....	34
LEARN: Strep Throat Lecture and Demonstration.....	37
REVIEW: Strep Throat Dosing Guide and Scenarios.....	41
Lesson Four – Croup.....	46
FOCUS: Croup.....	47
LEARN: Croup Lecture and Demonstration.....	50
REVIEW: Croup Case Study and Scenarios.....	55
Lesson Five – Pneumonia	59
FOCUS: Pneumonia Types	60
LEARN: Pneumonia Lecture and Demonstration.....	63
REVIEW: Pneumonia Post Test	68
Lesson Six – Asthma.....	71
FOCUS: Asthma	72
LEARN: Asthma Lecture and Demonstration	75
REVIEW: Asthma Case Study and Scenarios	81
Sources	84

Common Respiratory and Throat Diseases Curriculum

This curriculum accompanies the Common Respiratory Diseases Baby, which offers realistic practice identifying and managing a series of infant respiratory/throat conditions. The curriculum teaches students how to identify illnesses and care for infants in a variety of health-related respiratory scenarios. Students will get hands-on practice learning foundational knowledge and transferable skills needed in childcare and healthcare.

Author



Sarah Schulze MSN, APRN, CPNP, is a board-certified pediatric nurse practitioner (NP). She earned her BSN from Indiana State University and her MSN from University of Illinois at Chicago. As an NP she has worked in primary care pediatrics and adolescent mental health.

Sarah's special interests include growth and development, mental health, and breastfeeding. She is also a certified lactation counselor. Sarah serves as a medical expert, writing and editing content for various websites, educational resources, and apps.

Curriculum Structure

The *Common Childhood Respiratory Diseases Curriculum* is composed of the following lessons. Approximate lesson times are included.

Lesson	Title	Approximate Time
One	Common Cold	60 minutes
Two	Bronchiolitis/RSV	60 minutes
Three	Strep Throat	60 minutes
Four	Croup	60 minutes
Five	Pneumonia	60 minutes
Six	Asthma	60 minutes
	Total	6 hours

Lesson Structure

Each lesson begins with a Lesson Overview, Lesson Objectives, and a Lesson at a Glance table, which lists lesson activities, materials required, suggested preparation steps, and approximate class time.

Lesson Sections

The actual lesson follows the overview, which contains some of the sections described below.

FOCUS

Every lesson begins with a FOCUS activity intended to capture participants' attention. This may be in the form of a small or large class discussion, game, demonstration, or review of previous lesson information. During this activity, participants are introduced to the topic of the lesson.

LEARN

The LEARN activity in each lesson varies in its presentation mode. It may be a slide presentation, group activity, or demonstration.

REVIEW

The majority of lessons end with a REVIEW activity intended to briefly review the lesson's key messages or main points.

Lesson One – Common Cold

Lesson Overview

This lesson provides an overview of the causes, symptoms, and treatment of the common cold. Students will demonstrate proper use of nasal saline and bulb suction as well as discuss how to minimize the spread of contagious organisms.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify a variety of ways the common cold is spread and demonstrate ways the spread can be prevented
- Identify signs and symptoms of cold infection in an infant
- Demonstrate methods to relieve congestion in an infant with a cold
- Identify red flags associated with complications of the common cold

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS	• <i>Common Cold Pre-Test</i> • <i>Common Cold Pre-Test – Answer Key</i>	1. Print/photocopy <i>Common Cold Pre-Test</i> (one per participant).	10 minutes
LEARN	• <i>Common Cold</i> slide presentation • <i>Common Cold Notes Page</i> • <i>Common Cold Notes Page – Answer Key</i> • Common Respiratory Diseases Baby	1. Print/photocopy the <i>Common Cold Notes Page</i> for each participant. 2. Prepare the <i>Common Cold</i> slide presentation for viewing, 3. Read the provided lecture notes. 4. Prepare the Common Respiratory Diseases Baby for demonstration.	35 minutes
REVIEW	• <i>Common Cold Case Study</i> • Common Childhood Respiratory Diseases Scenario Cards	1. Print/photocopy <i>Common Cold Case Study</i> for each participant. 2. Display or photocopy the four common cold scenario cards.	15 minutes

Lesson One – Common Cold

FOCUS: Common Cold

15 minutes

Purpose:

Assess existing knowledge about the common cold and its management as well as serve as study materials once completed.

Materials:

- *Common Cold Pre-Test*
- *Common Cold Pre-Test* – Answer Key

Facilitation Steps:

1. Distribute the *Common Cold Pre-Test* to students.
2. Allow students to complete the test.
3. Review the test and correct answers as a class using the *Common Cold Pre-Test* – Answer Key so that students may learn from reviewing correct answers.

Common Cold Pre-Test

Instructions: Circle the correct answer to each of the following questions.

1. What is the medical term for the common cold?
 - a. Allergic rhinitis
 - b. Viral upper respiratory infection
 - c. Streptococcus pharyngitis
 - d. Bronchiolitis
2. Which organism is the most frequent cause of the common cold?
 - a. Rhinovirus
 - b. Coronavirus
 - c. Influenza
 - d. Streptococcus
3. How long can a cold virus live on toys or surfaces an infected child has touched?
 - a. 2 hours
 - b. 5 hours
 - c. 48 hours
 - d. 2 weeks
4. Which is the hallmark symptom of the common cold?
 - a. Ear pain
 - b. Runny or congested nose
 - c. Lethargy
 - d. Fever for more than 72 hours
5. How many days does the typical common cold last?
 - a. 3-5 days
 - b. 7-10 days
 - c. 10-14 days
 - d. 14-21 days
6. What is the typical treatment for the common cold?
 - a. Steroids
 - b. Antibiotics
 - c. Antivirals
 - d. Supportive care
7. Which is a dangerous complication of the common cold?
 - a. Fever
 - b. Rheumatic heart disease
 - c. Dehydration
 - d. Antibiotic resistance
8. When is fever a concern?
 - a. Any time it occurs
 - b. In infants less than 3 months old
 - c. When it lasts less than 72 hours
 - d. At more than 100.4° F

Common Cold Pre-Test – Answer Key

1. What is the medical term for the common cold?
 - a. Allergic rhinitis
 - b. Viral upper respiratory infection**
 - c. Streptococcus pharyngitis
 - d. Bronchiolitis
2. Which organism of the most frequent cause of the common cold?
 - a. Rhinovirus**
 - b. Coronavirus
 - c. Influenza
 - d. Streptococcus
3. How long can a cold virus live on toys or surfaces an infected child has touched?
 - a. 2 hours**
 - b. 5 hours
 - c. 48 hours
 - d. 2 weeks
4. Which is the hallmark symptom of the common cold?
 - a. Ear pain
 - b. Runny or congested nose**
 - c. Lethargy
 - d. Fever for more than 72 hours
5. How many days does the typical common cold last?
 - a. 3-5 days
 - b. 7-10 days
 - c. 10-14 days**
 - d. 14-21 days
6. What is the typical treatment for the common cold?
 - a. Steroids
 - b. Antibiotics
 - c. Antivirals
 - d. Supportive care**
7. Which is a dangerous complication of the common cold?
 - a. Fever
 - b. Rheumatic Heart Disease
 - c. Dehydration**
 - d. Antibiotic resistance
8. When is fever a concern?
 - a. Any time it occurs
 - b. In infants less than 3 months old**
 - c. When it lasts less than 72 hours
 - d. At more than 100.4° F

Lesson One – Common Cold

LEARN: Common Cold Lecture and Demonstration

15-30 minutes

Purpose:

Discuss the causes, symptoms, and treatment of the common cold as well as care of the child with the common cold in a school or daycare setting.

Materials:

- *Common Cold* slide presentation
- *Common Cold Notes Page*
- *Common Cold Notes Page – Answer Key*
- Common Respiratory Diseases Baby

Facilitation Steps:

1. Distribute the *Common Cold Notes Page* and encourage students to take notes during the lecture.
2. Read the following material from the lecture:

Slide 1: Introduction slide

Lesson one discusses the common cold in infants.

Slides 2-3: Overview and Causes

A cold is a viral infection affecting the upper airway or the nose and throat. There are hundreds of viruses that cause colds and rhinovirus is the most common one. Everyone gets colds at some point in their lives, usually a few times per year. Babies often get many colds over the course of a year because they encounter all of these viruses for the first time and have little immunity. If they go to daycare or have older siblings, their exposure to viral illness is even greater.

There are a few risk factors that increase the occurrence of the common cold, including children with a compromised immune system, exposure to other children like at daycare or school, and the time of year with winter and spring being the most common.

Common colds spread a variety of ways. In all these ways, the virus must encounter the mouth, nose, or eyes to infect someone. They can spread through droplets that pass through the air if an infected person coughs, sneezes, or talks near a baby's face. They can also spread through direct contact if an infected person touches their own mouth, nose, or eyes, and then touches the baby on the face or hands where the baby might then touch their own face.

If an infected person touches their mouth or nose, and then touches another object like toys, bottles, or surfaces; the virus can live on those objects for up to two hours. If the baby then encounters those same objects and touches their own mouth, nose, or eyes, the virus can infect them as well. The spread of cold viruses can be prevented through frequent handwashing with warm, soapy water and frequently wiping down surfaces, toys, and objects in shared spaces, especially at childcare centers or schools. Staying home or wearing a mask when symptomatic or feeling ill can also prevent the spread.

Slide 4: Signs and Symptoms

Signs and symptoms of the common cold center around congestion or runny nose. Nasal discharge may start off thin and clear and progress to very thick and yellow or green. The color does not mean it is a bacterial infection; it is related to normal skin and nose bacteria getting caught in the excess mucous and building up over time, creating that discoloration. Other symptoms include sneezing, coughing, decreased appetite, irritability or fussiness, fever, difficulty sleeping, or difficulty feeding from the breast or bottle due to nasal congestion.

It is also important to note that coughing is usually from mucous draining down the back of the throat or from throat irritation, not the lungs, because colds only affect the upper airway.

Slide 5: Caring for an Infant with the Common Cold

Colds are always caused by viral illnesses, so antibiotics are not effective against them. Therefore, treatment is entirely supportive care. Babies who are uncomfortable, fussy, or have fevers can be given fever-reducing medication, like Tylenol, or, for babies older than 6 months, Ibuprofen. Doses are based on an infant's weight, not age. You also do not *have* to treat fever if an infant isn't fussy. Fever is an immune response and how the body fights infection, it is not harmful to the body and doesn't have to be treated.

You must also keep infants well hydrated. You can do this with breastmilk, formula, or water, or Pedialyte for older infants. It might be hard for them to do a full feeding because of nasal congestion, so small amounts of liquids given frequently is best. Cool mist humidifiers, nasal saline, and bulb suction can all help thin and clear secretions. Propping the head of the bed while babies sleep can help with drainage and cough as well. Most viral colds last 10-14 days with a gradual worsening of symptoms over the first few days, peaking around five to seven days, and resolving over the next week. This can seem like a long time and be very frustrating for parents trying to care for a fussy baby who isn't eating or sleeping well. However, there isn't cause for concern unless symptoms are still getting worse after the first 7-10 days.

Slide 6: Potential Complications

Dehydration and secondary infections, like ear infection or pneumonia, are complications you should watch out for.

Slides 7-8: Red Flags

For dehydration, watch out for decreased urine output or fewer wet diapers, sunken fontanelle, or crying with no tears. Also, watch out for children who are very lethargic, sleepy, or difficult to wake. Sometimes colds can lead to fluid in the ears or lungs that harbor bacteria.

This leads to more serious illnesses that require antibiotic treatment. Watch for wheezing and difficulty breathing as well.

Watch for excessive coughing, especially if it includes vomiting or blood. Fever itself is not harmful but there are a few types of fever that you should be on alert for because they could indicate a more serious illness. For infants less than three months old, they still have maternal antibodies that help them fight infection, and their immune system will not trigger a fever for mild, easily resolved infections. If an infant this age has a fever, which is anything higher than 100.4 degrees Fahrenheit, a more serious, bigger infection is taking place and should be evaluated. For children older than three months, their body is generally able to fight infection within three days of fever. If a fever lasts more than 72 hours without breaking (except for when giving Tylenol or Ibuprofen), something more serious may be going on.

If an infant in your care is experiencing any of these problems, they should be assessed by a medical professional right away.

Slide 7: Sources

3. Common Respiratory Diseases Baby demonstration:
 - a. Hold the Common Respiratory Diseases Baby and turn it on, choosing the Common Cold setting.
 - b. Pass it around and encourage students to hold it.
 - c. When everyone has had a chance to observe and take a closer look, ask students to identify some of the signs and symptoms of the common cold they observed in the infant.
 - d. Review what they have learned about the care of an infant with a common cold.

Common Respiratory and Throat Diseases Curriculum

4. Share a brief video about the common cold and infants. Here are a few to choose from:
 - https://www.youtube.com/watch?v=ounAbuQ_1Bc
 - <https://www.youtube.com/watch?v=X6deEcMfB7s>
 - <https://www.youtube.com/watch?v=H7sQn850IkM>
 - <https://www.youtube.com/watch?v=hwUnjzOXNXI>

Common Cold Notes Page

Instructions: Take notes on the topic as the slide presentation is shared.

1. Common colds affect the _____ and _____ (upper airway).
2. Babies may get _____ colds each year
3. Colds are spread through:
4. To prevent the spread:
5. Signs and symptoms of the common cold could include:

6. Caring for an Infant with a Common Cold

7. Potential Complications and Red Flags

Common Cold Notes Page – Answer Key

Instructions: Take notes on the topic as the slide presentation is shared.

1. Common colds affect the nose and throat (upper airway).
2. Babies may get many colds each year.
3. Colds are spread through:
 - Air
 - Direct contact
 - Contaminated surfaces
4. To prevent the spread:
 - Frequent handwashing
 - Wiping down surfaces
 - Stay home
 - Wear a mask
5. Signs and symptoms of the common cold could include:
 - Congested or runny nose
 - Nasal discharge
 - May be thin and clear and progress to thick and yellow or green
 - Sneezing
 - Coughing
 - Decreased appetite
 - Irritability/fussiness
 - Fever
 - Difficulty sleeping
 - Difficulty nursing or drinking from bottle
6. Caring for an Infant with a Common Cold
 - Supportive care
 - Fever-reducing medications (for fever or discomfort/fussiness)
 - Hydration
 - Cool mist humidifier
 - Nasal saline and suction
 - Prop head of the bed

7. Potential Complications and Red Flags

Dehydration, secondary infection

Lesson One – Common Cold

REVIEW: Common Cold Case Study and Scenarios

15 minutes

Purpose:

Provide hands-on experience for students to instill nasal saline and use bulb suction as well as practice proper hand hygiene to prevent the spread of the common cold.

Materials:

- *Common Cold Case Study*
- Common Childhood Respiratory Diseases Scenario Cards

Facilitation Steps:

1. Divide the class into four small groups.
Give each of the groups one of the common cold scenario cards.
2. Have the groups read the scenario and discuss it among themselves. They should read and answer the question(s) on the scenario card as well.
3. Call the class back together with each small group reading their brief scenario and the solution they arrived at.
4. Distribute the *Common Cold Case Study* to students. Use this as an assessment as students apply what they have learned during the lesson.

Name: _____ Class: _____

Common Cold Case Study

You work at a daycare where there are currently several children with the common cold. Four-month-old Sally is brought in by her parents this morning with instruction to use nasal saline and bulb suction to relieve her congestion every one to two hours.

When you look at Sally, what symptoms do you expect to observe that are consistent with the common cold?

When managing Sally's nasal congestion today, what steps must you take to be sure you do not spread the infection to other children?

What additional symptoms, if any, would warrant a call to Sally's parents to have her taken to the pediatrician for further evaluation?

Common Cold Case Study – Answer Key

You work at a daycare where there are currently several children with the common cold. Four-month-old Sally is brought in by her parents this morning with instruction to use nasal saline and bulb suction to relieve her congestion every one to two hours.

When you look at Sally, what symptoms do you expect to observe that are consistent with the common cold?

Congested or runny nose, nasal discharge

When managing Sally's nasal congestion today, what steps must you take to be sure you do not spread the infection to other children?

Frequently wash hands with warm, soapy water and wipe down surfaces and toys

What additional symptoms, if any, would warrant a call to Sally's parents to have her taken to the pediatrician for further evaluation?

Decreased urine output, sunken fontanelle, not tears, lethargy or extreme sleepiness, wheezing or difficulty breathing, excessive coughing or coughing blood

Lesson Two – Bronchiolitis/RSV

Lesson Overview

This lesson provides an overview of the causes, symptoms, and treatment of the bronchiolitis. Students will demonstrate understanding of illness that is mild and can be managed at home versus when symptoms are more severe and medical evaluation is necessary.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify a variety of ways the bronchiolitis is spread and discuss ways the spread can be prevented
- Identify signs and symptoms of bronchiolitis in an infant
- Discuss helpful and unhelpful treatment methods for children with bronchiolitis
- Identify red flags associated with complications of bronchiolitis

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS	• <i>Lung Anatomy Worksheet</i> • <i>Lung Anatomy Worksheet – Answer Key</i>	1. Print/photocopy the <i>Lung Anatomy Worksheet</i> (one per participant). 2. Have the <i>Lung Anatomy Worksheet – Answer Key</i> available for reference.	10 minutes
LEARN	• <i>Bronchiolitis</i> slide presentation • Printed copies of <i>Bronchiolitis</i> slides	1. Print/photocopy the <i>Bronchiolitis</i> slide presentation for each participant. 2. Prepare the <i>Bronchiolitis</i> slide presentation for viewing. 3. Read the provided lecture notes.	35 minutes
REVIEW	• <i>Bronchiolitis Matching Worksheet</i> • <i>Bronchiolitis Matching Worksheet – Answer Key</i>	1. Print/photocopy the <i>Bronchiolitis Matching Worksheet</i> (one per participant).	15 minutes

Lesson Two – Bronchiolitis

FOCUS: Bronchiolitis/RSV

10 minutes

Purpose:

Familiarize students with anatomy of the respiratory tract to facilitate understanding of the disease process, signs, and symptoms of bronchiolitis.

Materials:

- *Lung Anatomy Worksheet*
- *Lung Anatomy Worksheet – Answer Key*

Facilitation Steps:

1. Distribute the *Lung Anatomy Worksheet* to each student.
2. Allow time for students to complete the worksheet.
3. Review the *Lung Anatomy Worksheet – Answer Key* as a class.
4. Share an introductory video about bronchiolitis and RSV in young children. Here are a couple to choose from:
<https://www.youtube.com/watch?v=p-tFsdHI9i8&t=2s>

<https://www.youtube.com/watch?v=xM2U8tkZgas>

Lung Anatomy Worksheet

Word Bank:

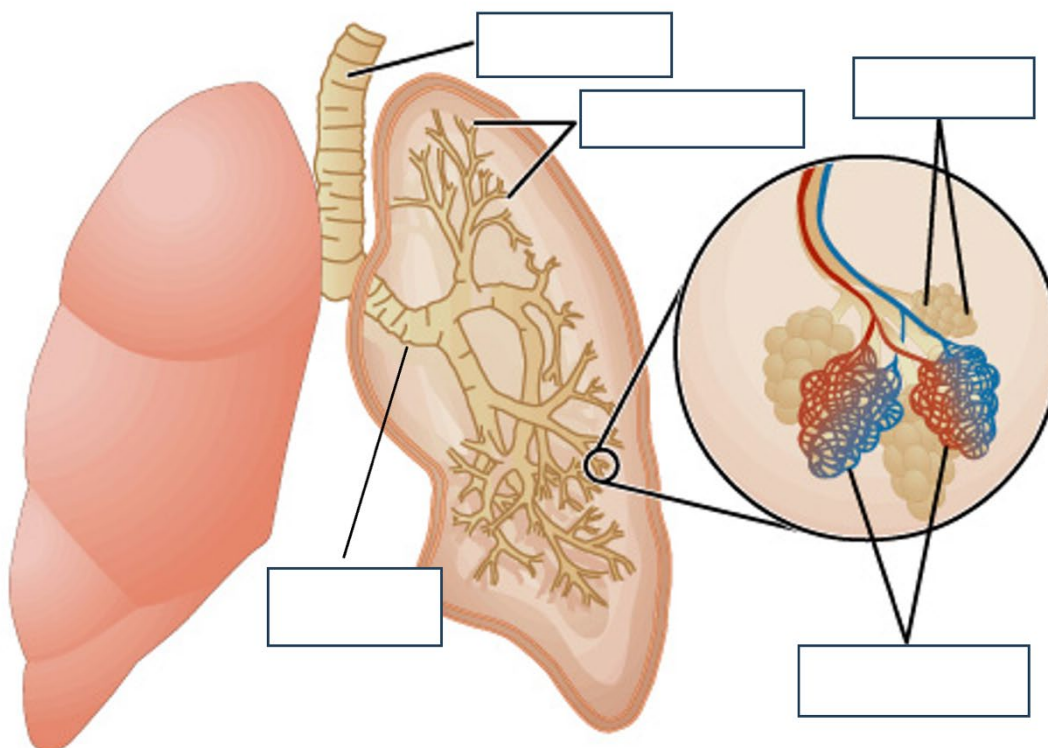
Alveoli

Bronchus

Bronchioles

Capillaries

Trachea



Lung Anatomy Worksheet – Answer Key

Word Bank:

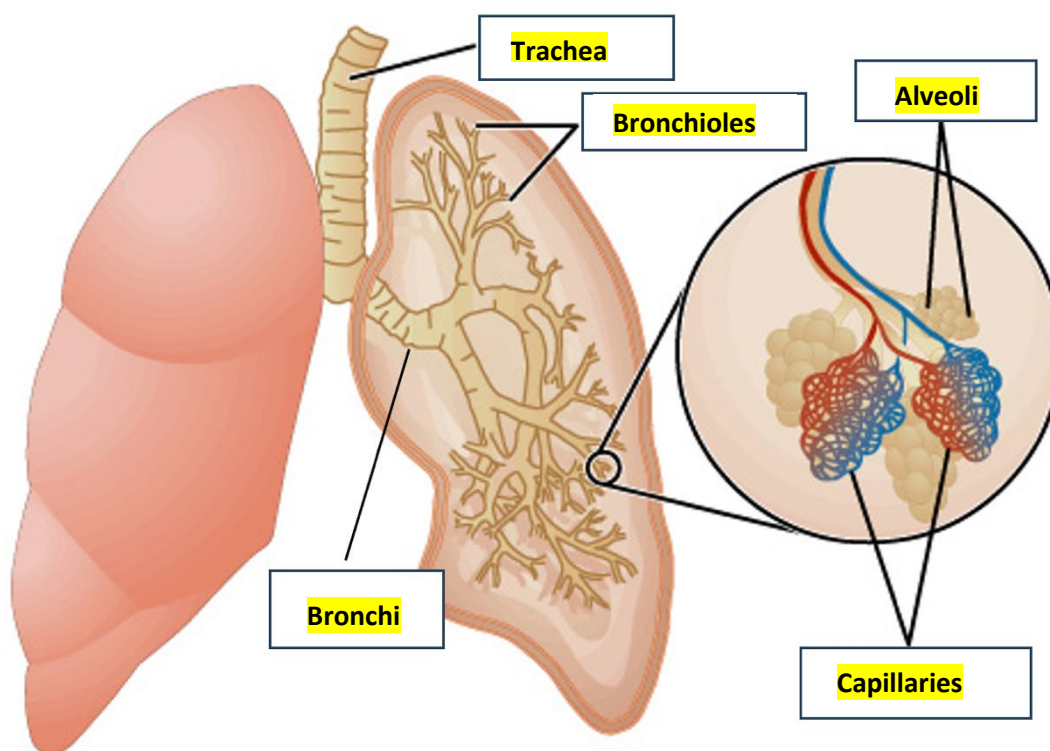
Alveoli

Bronchus

Bronchioles

Capillaries

Trachea



Lesson Two – Bronchiolitis

LEARN: Bronchiolitis/RSV Lecture and Demonstration

35 minutes

Purpose:

Discuss the causes, symptoms, and treatment of bronchiolitis as well as caring for infants with bronchiolitis in a school or daycare setting.

Materials:

- *Bronchiolitis* slide presentation
- *Bronchiolitis Notes Page*
- *Bronchiolitis Notes Page – Answer Key*
- Common Respiratory Diseases Baby

Facilitation Steps:

1. Distribute the *Bronchiolitis Notes Page* and encourage students to take notes during the lecture.
2. Read the following material from the lecture:

Slide 1: Introductory slide

Lesson two is about bronchiolitis.

Slides 2-3: Overview and Causes

This is one of the most common infections that occurs in young children, and it involves swelling, irritation, and mucous buildup in the small airways. Bronchiolitis is almost always caused by respiratory syncytial virus or RSV. There are other viruses that can cause it, like influenza, rhinovirus, coronavirus, and any other cold viruses. RSV is the most common and nearly all children experience it by age two. Children with increased risk include those born prematurely or with heart or lung problems. Those born with compromised immune systems or attending daycare centers also have an increased risk. Finally, children with older siblings or exposure to smoking are more likely to get RSV as well.

RSV and other viruses that cause bronchiolitis can spread a variety of ways. In all these transmission methods, the virus must encounter the mouth, nose, or eyes to infect someone. Illness can spread through droplets in the air if an infected person coughs, sneezes, or talks near a baby's face. It can also spread through direct contact, such as when an infected person kisses a baby on the face or touches their own mouth, nose, or eyes before touching the baby on their face or hands because the baby might then touch their own face. Alternatively, if an infected person touches their mouth or nose, and then touches another object like toys, bottles, or surfaces, the virus can live on those objects for several hours. If the baby then encounters those same objects and touches their own mouth, nose, or eyes, the bacteria can infect them as well.

Many viruses that can cause bronchiolitis have vaccines available, which is the most effective way to reduce the occurrence or severity of the disease. Vaccines are available for flu, COVID, and a new one is now available in limited settings for RSV but should become more widespread in the coming years. Spread of the illness can be prevented through frequent handwashing with warm, soapy water and regularly wiping down surfaces, toys, and objects in shared spaces, especially at childcare centers or schools. Staying home or wearing a mask when you're symptomatic or feeling ill can also keep the illness from spreading.

Slide 4: Anatomy of the Lungs

You can think about the lungs like a bunch of grapes, in which you have larger branches or stems that move inward to smaller branches and then end with the grapes at the end of the smallest branches. In the lungs, the larger airways that connect to the trachea are called the bronchi and these branch into progressively smaller airways, called the bronchioles. At the end of the bronchioles are air-filled sacs, called alveoli. The alveoli have capillaries that wrap around them, and this is where the air exchanges gases, like oxygen and carbon dioxide, with the bloodstream.

In bronchiolitis, the bronchioles and alveoli are swollen and fill with mucous, making it much more difficult for them to inflate and exchange gases.

Slide 5: Signs and Symptoms

Bronchiolitis often begins much like a cold with nasal congestion or discharge, cough, fever, and irritability and fussiness. However, instead of mild symptoms that improve, it progresses to more severe symptoms, like excessive coughing, stridor (a whistly noisy sound when breathing), wheezing, increased work of breathing (using abdominal and neck muscles or needing to sit up to breathe), and difficulty feeding or drinking liquids.

Slide 6: Treatment

Because bronchiolitis is caused by RSV and other viruses, it cannot be treated with antibiotics. Treatment is primarily supportive care. You can give medications for fever or discomfort, like Tylenol, or, for infants older than 6 months, Ibuprofen. Push small amounts of fluids frequently, use a cool mist humidifier, use nasal saline and suction, and prop the head of the bed to help with coughing and drainage. Sometimes, if infants are really working hard to breathe, they may need extra support that can only be received in the hospital, like supplemental oxygen or, for severe cases, a ventilator.

For infants who are dehydrated or having a really tough time getting enough fluids, IV fluids can be given. Sometimes you will hear of infants receiving albuterol or steroids to help reduce swelling in the airways, but there is a lot of controversy over these methods and studies show them to not actually be effective for viral bronchiolitis. Regardless of how much supportive care is needed, symptoms tend to resolve within 10-14 days.

Slide 7: Potential Complications

The biggest risks with bronchiolitis include dehydration, hypoxia (low oxygen levels in the blood), and respiratory failure. Whenever infants must use extra effort to breathe, they can eventually tire out. Think about if you do a lot of sit-ups in a row, over time it gets harder and harder and then eventually you can't do anymore because those muscles need a break. When babies use their neck and abdominal muscles to help their lungs move air in and out, eventually those muscles get tired and may give out. This is what causes respiratory failure, and it is a medical emergency. Babies with respiratory failure will need to be on a ventilator. Secondary bacterial infections, like pneumonia or ear infection, can also occur.

Slide 8: Red Flags

Red flags to watch for with dehydration include decreased urine output, sunken fontanelle, crying with no tears, and lethargy. With hypoxia or respiratory failure, you should pay attention to the use of abdominal and neck muscles for breathing, blue or gray discoloration around the mouth, stridor, or pauses in breathing.

Slide 8: Sources

3. Common Respiratory Diseases Baby demonstration:

- a. Hold the Common Respiratory Diseases Baby and turn it on, choosing the Bronchiolitis setting.
- b. Pass it around and encourage students to hold it.
- c. When everyone has had a chance to observe and take a closer look, ask students to identify some of the signs and symptoms of bronchiolitis they observed in the infant.

Common Respiratory and Throat Diseases Curriculum

- d. Review what they have learned about caring for an infant with bronchiolitis or RSV.
4. Share a brief video about bronchiolitis/RSV and infants. Here are a few to choose from:
<https://www.youtube.com/watch?v=t5hK2UyHfFk>
<https://www.youtube.com/watch?v=HJjb09zxIak>
<https://www.youtube.com/watch?v=rSdX1UcHqrQ>

Name: _____ Class: _____

Bronchiolitis Notes Page

Instructions: Take notes on the topic as the slide presentation is shared.

1. Bronchiolitis is almost always caused by a virus. The most common virus is _____.
2. Bronchiolitis is a common infection that involves swelling, irritation, and _____
_____ in small airways.
3. Bronchiolitis spreads through:
4. To prevent the spread of bronchiolitis:
5. Signs and symptoms of bronchiolitis could include:
6. Potential complications and red flags:

Bronchiolitis Notes Page – Answer Key

Instructions: Take notes on the topic as the slide presentation is shared.

1. Bronchiolitis is almost always caused by a virus. The most common virus is RSV.
2. Bronchiolitis is a common infection that involves swelling, irritation, and mucous buildup in small airways.
3. Bronchiolitis spreads through:
 - Air
 - Direct contact
 - Contaminated surfaces
4. To prevent the spread of bronchiolitis:
 - Vaccines
 - Frequent handwashing
 - Wiping down surfaces
 - Stay home
 - Wear a mask
5. Signs and symptoms of bronchiolitis could include:
 - Nasal discharge or congestion
 - Cough
 - Fever
 - Irritable/fussy
 - Excessive coughing
 - Stridor
 - Wheezing
 - Increased work of breathing
 - Difficulty drinking/feeding

6. Supportive care treatments could include:

- Medications for fever and discomfort
- Tylenol or, if older than 6 months, Ibuprofen

- Hydration
- Cool mist humidifier
- Nasal saline and suction
- Prop head of bed

7. Potential complications and red flags

- Dehydration
- Hypoxia
- Respiratory failure
- Secondary infection
- Pneumonia
- Otitis media (ear infection)

Lesson Two – Bronchiolitis

REVIEW: Bronchiolitis/RSV Matching Activity and Scenarios

15 minutes

Purpose:

To facilitate understanding of bronchiolitis in infants, including respiratory tract anatomy, disease transmission, signs, symptoms, and treatment.

Materials:

- *Bronchiolitis Matching Worksheet*
- *Bronchiolitis Matching Worksheet – Answer Key*
- Common Childhood Respiratory Diseases Scenario Cards

Facilitation Steps:

1. Divide the class into four small groups. Give each group one of the bronchiolitis scenario cards.
2. Have the groups read the scenario and discuss it among themselves. They should read and answer the question(s) found on the scenario card.
3. Call the class back together with each small group reading their brief scenario and the solution they arrived at.
4. Distribute the *Bronchiolitis Matching Worksheet*
5. Allow students to pair up to complete the worksheet.
6. Review the worksheet as a class using the *Bronchiolitis Matching Worksheet – Answer Key*.

Name: _____ Class: _____

Bronchiolitis Matching Worksheet

Instructions: Match the terms in Column A to their correct definitions in Column B.

Column A

A. Bronchi

B. Bronchioles

C. Alveoli

D. Bronchiolitis

E. RSV

F. Stridor

G. Hypoxia

H. Respiratory Failure

Column B

_____ High-pitched whistling sound when breathing through a narrowed airway

_____ Inflammation and increased mucous impacting the lungs' ability to inflate and exchange gas

_____ Larger airways that branch off from the trachea

_____ Muscle fatigue and poor gas exchange resulting in the lungs no longer being able to support the body's oxygen needs

_____ The smallest branches of the lung's airways

_____ The most common organism that causes bronchiolitis

_____ Low oxygen levels in the bloodstream

_____ Small, air-filled sacs in the lungs that exchange gas with the bloodstream

Bronchiolitis Matching Worksheet

– Answer Key

Instructions: Match the terms in Column A to their correct definitions in Column B.

Column A

A. Bronchi

B. Bronchioles

C. Alveoli

D. Bronchiolitis

E. RSV

F. Stridor

G. Hypoxia

H. Respiratory Failure

Column B

F High-pitched whistling sound when breathing through a narrowed airway

D Inflammation and increased mucous impacting the lungs' ability to inflate and exchange gas

A Larger airways that branch off from the trachea

H Muscle fatigue and poor gas exchange resulting in the lungs no longer being able to support the body's oxygen needs

B The smallest branches of the lung's airways

E The most common organism that causes bronchiolitis

G Low oxygen levels in the bloodstream

C Small, air-filled sacs in the lungs that exchange gas with the bloodstream

Lesson Three – Strep Throat

Lesson Overview

This lesson provides an overview of the causes, symptoms, and treatment of strep throat. Students will demonstrate an understanding of prevention and treatment of strep throat as well as identify complications that can occur if strep throat is not properly treated.

Lesson Objectives

After completing this lesson, participants will be able to:

- Discuss how strep throat is diagnosed and ways that treatment differ from other illnesses discussed so far
- Identify signs and symptoms of strep throat in a child
- Demonstrate methods to relieve fever and pain in a child with strep throat
- Identify red flags associated with complications of strep throat

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS	• <i>Respiratory Illness Symptom Worksheet</i> • <i>Respiratory Illness Symptom Worksheet – Answer Key</i>	1. Print/photocopy the <i>Respiratory Illness Symptoms Worksheet</i> (one per participant). 2. Have the answer key available for reference.	15 minutes
LEARN	• <i>Strep Throat</i> slide presentation • <i>Strep Throat Notes Page</i> • <i>Strep Throat Notes Page – Answer Key</i> • Common Respiratory Diseases Baby	1. Print/photocopy the <i>Strep Throat Notes Page</i> for each participant. 2. Prepare the <i>Strep Throat</i> slide presentation for viewing. 3. Read over the provided lecture notes. 4. Prepare the Common Respiratory Diseases Baby for demonstration.	30 minutes
REVIEW	• <i>Antibiotic Dosing Guide</i> • Common Childhood Respiratory Diseases Scenario Cards • <i>Antibiotic Dosing Practice</i> • <i>Antibiotic Dosing Practice – Answer Key</i>	1. Print/photocopy the <i>Antibiotic Dosing Guide</i> and <i>Dosing Practice sheets</i> (one of each per participant). 2. Display or photocopy the four strep throat scenario cards.	15 minutes

Lesson Three – Strep Throat

FOCUS: Strep Throat Symptoms

15 minutes

Purpose:

Help students identify and differentiate symptoms of various childhood respiratory illnesses, with a particular focus on strep throat.

Materials:

- *Respiratory Illness Symptom Worksheet*
- *Respiratory Illness Symptom Worksheet – Answer Key*

Facilitation Steps:

1. Distribute the *Respiratory Illness Symptom Worksheet*.
2. Allow students to pair up to complete the worksheet.
3. Review the worksheet as a class using the *Respiratory Illness Symptom Worksheet – Answer Key*.
4. Introduce strep throat with a brief video on the symptoms:
<https://www.youtube.com/watch?v=r3ENybFBbsA>

Name: _____ Class: _____

Respiratory Illness Symptom Worksheet

Instructions: Place an X in the column for each symptom that is part of the illness identified at the top.

	Common Cold	Bronchiolitis	Strep Throat
Runny nose			
Fever			
Sore throat			
Cough			
Stridor			
Swollen tonsils			
White patches or pus on tonsils			
Caused by bacteria			
Difficulty eating			
Rash			
Headache			

Respiratory Illness Symptom Worksheet – Answer Key

	Common Cold	Bronchiolitis	Strep Throat
Runny nose	X	X	
Fever	X	X	X
Sore Throat			X
Cough	X	X	
Stridor		X	
Swollen tonsils			X
White patches or pus on tonsils			X
Caused by bacteria			X
Difficulty eating	X	X	X
Rash			X
Headache			X

Lesson Three – Strep Throat

LEARN: Strep Throat Lecture and Demonstration

30 minutes

Purpose:

Discuss the causes, symptoms, and treatment of strep throat as well as how to care for a child with the strep throat in a school or daycare setting.

Materials:

- *Strep Throat* slide presentation
- *Strep Throat Notes Page*
- *Strep Throat Notes Page – Answer Key*
- Common Respiratory Diseases Baby

Facilitation Steps:

1. Distribute the *Strep Throat Notes Page* and encourage students to take notes during the lecture.
2. Read the following material from the lecture:

Slide 1: Introductory slide

Lesson three is about strep throat.

Slides 2-3: Overview and Causes

Strep throat is the most common bacterial throat infection and accounts for 20% of all sore throats with fever. Other sore throats may be from viral infections. Strep is much more common during the winter and early spring months, though it does circulate year-round. It is passed easily between children.

The bacteria that cause strep throat can spread a variety of ways. In all these transmission methods, the bacteria must encounter the mouth, nose, or eyes to infect someone. Illness can spread through droplets in the air when an infected person coughs, sneezes, or talks near a baby's face. It can also spread through direct contact when an infected person kisses a baby on the face or touches their own mouth, nose, or eyes before touching the baby on the face or hands. This is because the baby might then touch their own face. It can be spread by sharing food or drink with someone. Finally, an infected person can spread the illness by touching their mouth or nose and then touching another object, like toys, bottles, or surfaces, the bacteria can live on those objects for short periods of time. If the baby then encounters those same objects and touches their own mouth, nose, or eyes, the bacteria can infect them as well.

Slide 4: Signs and Symptoms

Signs and symptoms include a sore throat. Older kids can tell you if their throat hurts, but, for younger children who can't talk yet, this might look like not wanting to eat or drink, even favorite foods. The tonsils and throat can be red and inflamed and may have white patches or pus. There can be tiny red spots on the roof of the mouth or back of the throat, which are burst blood vessels (called petechiae). Lymph nodes in the neck may be swollen and tender, and children may have fever, headache, body aches, nausea, and vomiting. Sometimes a rough, sandpapery pink rash also occurs. When strep throat occurs with a rash, it is called scarlet fever.

Slides 5-6: Treatment

Strep throat is a bacterial infection, warranting antibiotics to treat it. It is caused by group A beta hemolytic streptococcus. This can be diagnosed by a throat swab that is assessed for antigen or rapid test, PCR, or throat culture.

Supportive care for symptoms is also helpful while waiting on the antibiotics to take effect. Tylenol and Ibuprofen can help with fever and pain. Small sips of cool liquids, eating soft foods, running a humidifier, and promoting rest are all helpful.

Slide 7: Potential Complications

Dehydration is a significant risk for strep throat as children may not feel like drinking because it hurts. Pushing those small, frequent sips and providing cool liquids or giving liquids while Tylenol or Ibuprofen are at their peak are important strategies. Strep is unique in that untreated infection can circulate in the body and cause secondary inflammatory illnesses in the cells of the kidneys and the heart. You should watch out for the usual signs of dehydration, like decreased urine output, dry lips and tongue, weakness, and lethargy. Stiff neck is another issue to be on alert for as it can indicate complications, like an abscess.

Rheumatic heart disease has its own set of symptoms, like joint pain, skin nodules, or a return of fever accompanied by a lacy or patchy rash. Glomerulonephritis may have symptoms like high blood pressure and swelling of the face and extremities.

Slide 8: Red Flags

Slide 9: Sources

3. Common Respiratory Diseases Baby demonstration:
 - a. Hold the Common Respiratory Diseases Baby and focus on the mouth and throat area for this demonstration.
 - b. Pass it around and encourage students to hold it and look into the throat, observing what symptoms they can see.
 - c. When everyone has had a chance to observe and take a closer look, ask students to identify some of the signs and symptoms of strep throat that they observed in the infant.
 - d. Review what they have learned about caring for an infant with strep throat.
4. Share a brief video about strep throat and infants. Here are a few to choose from:

What are the signs and symptoms of strep throat?
<https://www.youtube.com/watch?v=-ovhbkv2Npo>

Treatments for strep throat
<https://www.youtube.com/watch?v=-CH3CcNax5M>

Is your child's sore throat actually strep throat?
<https://www.youtube.com/watch?v=29xoWVnqh7E>

Chronic strep throat
<https://www.youtube.com/watch?v=-p5OGtRIleI>

Name: _____ Class: _____

Strep Throat Notes Page

Instructions: Take notes on the topic as the slide presentation is shared.

1. Strep throat is the most common _____ infection of the throat.
2. It accounts for _____% of sore throats with fever.
3. A risk of strep throat is that it circulates easily among _____.
4. Strep throat is spread through:
5. To prevent the spread:
6. Signs and symptoms of strep throat could include:
7. Treatment for strep throat:
8. Potential Complications and Red Flags

Strep Throat Notes Page – Answer Key

Instructions: Take notes on the topic as the slide presentation is shared.

1. Strep Throat is the most common **bacterial** infection of the throat.
2. It accounts for **20%** of sore throats with fever.
3. A risk of strep throat is that it circulates easily among **children**.
4. Strep throat is spread through:
 - **Air**
 - **Direct contact**
 - **Contaminated surfaces**
5. To prevent the spread:
 - **Frequent handwashing**
 - **Wiping down surfaces**
 - **Stay home**
 - **Wear a mask**
6. Signs and symptoms of strep throat could include:
 - **Sore throat**
 - **Swollen, red tonsils with or without white patches or pus**
 - **Tiny red spots on roof of mouth or back of throat**
 - **Swollen lymph nodes in neck**
 - **Fever**
 - **Headache**
 - **Rash**
 - **Body aches**
 - **Vomiting or nausea**
7. Treatment for strep throat:
Antibiotics for 7-10 days
8. Potential Complications and Red Flags
 - **Dehydration**
 - **Post-streptococcal inflammation (if untreated)**

- **Kidneys (glomerulonephritis)**
- **Heart (Rheumatic Heart Disease)**

Lesson Three – Strep Throat

REVIEW: Strep Throat Dosing Guide and Scenarios

15 minutes

Purpose:

Allow students to demonstrate reading a medication label and measuring and administering prescribed medication.

Materials:

- *Antibiotic Dosing Guide*
- Common Respiratory Diseases Baby
- Common Childhood Respiratory Diseases Scenario Cards
- *Antibiotic Dosing Practice*
- *Antibiotic Dosing Practice – Answer Key*

Facilitation Steps:

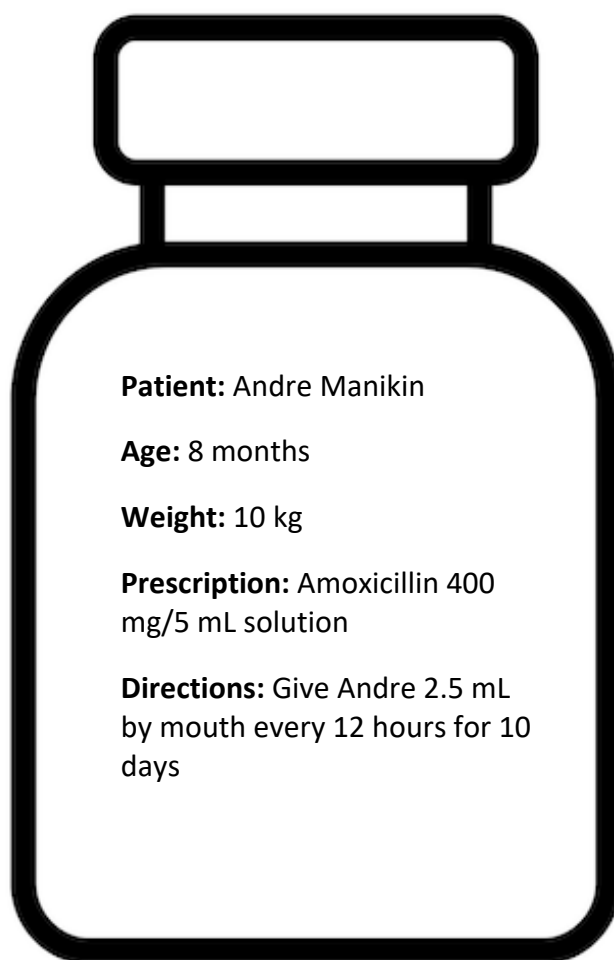
1. Divide the class into four small groups. Give each group one of the strep throat scenario cards.
2. Have the groups read the scenario and discuss it amongst themselves. They should read and answer the question(s) found on the scenario card.
3. Call the class back together with each small group reading their brief scenario and the solution they arrived at.
4. Distribute the *Antibiotic Dosing Guide* to students and put them in groups of two to three.
5. Read the following scenario:
You are caring for Andre, an infant at the childcare center who was recently diagnosed with strep throat. Today, his mother brings in an antibiotic that Andre is supposed to

receive every 12 hours. His last dose was at 9 p.m. last night. It is 7 a.m. now.

6. Ask students to determine what time they would give the next dosage.
Answer: 9 a.m.
How much medication should they give the Sally?
Answer: 2.5 mL
7. Give each group a chance to practice following the label instructions with the Common Respiratory Diseases Baby. Have them hold the manikin at a 45-degree angle and demonstrate giving small amounts until the medication is gone.
8. Distribute the *Antibiotic Dosing Practice* worksheet. Have students complete it, and then, as a whole group, share the correct line on each syringe via the answer key.

Name: _____ Class: _____

Antibiotic Dosing Guide



Antibiotic Dosing Practice

Instructions: Draw a line where the 2.5 mL dosage would be on each of these syringes.



Antibiotic Dosing Practice – Answer Key

Instructions: Draw a line where the 2.5 mL dosage would be on each of these syringes.



Lesson Four – Croup

Lesson Overview

This lesson provides an overview of the causes, symptoms, and treatment of croup. Students will demonstrate understanding of ways that croup is different from a common cold and how treatment may vary as well as how to manage symptoms in a daycare setting.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify a variety of ways viruses that cause croup are spread and demonstrate ways to prevent the spread
- Identify signs and symptoms of croup in an infant
- Demonstrate methods to reduce coughing in an infant with croup
- Identify red flags associated with complications of croup

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS	• <i>Croup Matching Worksheet</i> • <i>Croup Matching Worksheet – Answer Key</i>	1. Print/photocopy the <i>Croup Matching Worksheet</i> (one per participant). 2. Have the answer key available for reference.	15 minutes
LEARN	• <i>Croup</i> slide presentation • <i>Croup Notes Page</i> • <i>Croup Notes Page – Answer Key</i> • Common Respiratory Diseases Baby	1. Print/photocopy the <i>Croup Notes Page</i> for each participant. 2. Prepare the <i>Croup</i> slide presentation for viewing. 3. Read the provided lecture notes. 4. Prepare the Common Respiratory Diseases Baby for demonstration.	30 minutes
REVIEW	• <i>Croup Case Study</i> • <i>Croup Case Study – Answer Key</i> • Common Childhood Respiratory Diseases Scenario Cards	1. Print/photocopy the <i>Croup Symptom Management Case Study</i> for each participant. 2. Prepare the four croup scenario cards for discussion. 3. Have the case study answer key available for reference.	15 minutes

Lesson Four– Croup

FOCUS: Croup

15 minutes

Purpose:

Facilitate understanding of croup in infants, including causes, disease transmission, upper airway anatomy, signs, symptoms, and treatment.

Materials:

- *Croup Matching Worksheet*
- *Croup Matching Worksheet – Answer Key*

Facilitation Steps:

1. Distribute the *Croup Matching Worksheet* to students.
2. Allow students to pair up to complete the worksheet.
3. Review the worksheet as a class using the *Croup Matching Worksheet – Answer Key*.
4. Introduce croup by sharing this short video:
Croup in Babies: Causes, Symptoms, and Treatment
https://www.youtube.com/watch?v=nA_uJ8dtmDI

Name: _____ Class: _____

Croup Matching Worksheet

Instructions: Match the terms in Column A to their correct definitions in Column B.

Column A

- A. Larynx
- B. Trachea
- C. Steeple Sign
- D. Parainfluenza
- E. Barking cough
- F. Vaccination
- G. Supportive care
- H. Oral steroids
- I. Dehydration

Column B

- _____ Medication sometimes given to reduce airway inflammation
- _____ Organism most often responsible for croup
- _____ Airway narrowing visible on x-ray
- _____ Preventative method that reduces occurrence of croup from certain organisms
- _____ Potential complication of croup due to reduced fluid intake
- _____ The voice box, which becomes inflamed and gives croup its classic barky cough
- _____ Typical treatment of croup
- _____ The main airway into the lungs where inflammation occurs
- _____ The hallmark symptom of croup

Croup Matching Worksheet – Answer Key

Instructions: Match the terms in Column A to their correct definitions in Column B.

Column A

- A. Larynx
- B. Trachea
- C. Steeple Sign
- D. Parainfluenza
- E. Barking cough
- F. Vaccination
- G. Supportive care
- H. Oral steroids
- I. Dehydration

Column B

- H** Medication sometimes given to reduce airway inflammation
- D** Organism most often responsible for croup
- C** Airway narrowing visible on x-ray
- F** Preventative method that reduces occurrence of croup from certain organisms
- I** Potential complication of croup due to reduced fluid intake
- A** The voice box, which becomes inflamed and gives croup its classic barky cough
- G** Typical treatment of croup
- B** The main airway into the lungs where inflammation occurs
- E** The hallmark symptom of croup

Lesson Four – Croup

LEARN: Croup Lecture and Demonstration

30 minutes

Purpose:

Discuss the causes, symptoms, and treatment of croup well as caring for a child with croup in a school or daycare setting.

Materials:

- *Croup* slide presentation
- *Croup Notes Page*
- *Croup Notes Page – Answer Key*
- Common Respiratory Diseases Baby

Facilitation Steps:

1. Distribute the *Croup Notes Page* and encourage students to take notes during the lecture.
2. Read the following material from the lecture:

Slide 1: Introductory slide
Lesson four is about croup.

Slides 2-3: Overview and Causes

Croup is caused by a viral infection, often parainfluenza, which is a family of many viruses. However, it can result from many other virus types. It is characterized by the airway swelling, mostly where the upper and lower airways meet around the larynx (voice box), trachea, and bronchi. Swelling and irritation here causes the airway to narrow, resulting in noisy breathing and a barking cough. Croup is most common in children with small airways because a little bit of swelling impacts them more significantly than older children and adults. The highest rate of croup occurs in children ages six months to three years old and rarely occurs in children older than six years.

Parainfluenza and other viruses that cause croup can spread a variety of ways. In all these transmission methods, the virus must encounter the mouth, nose, or eyes to infect someone. Illness can spread through droplets in the air, such as when an infected person coughs, sneezes, or talks near a child's face. It can spread through direct contact when an infected person kisses a baby on the face or touches their own mouth, nose, or eyes before touching the baby's face or hands as the baby might then touch their own face. If an infected person touches their mouth or nose before touching another object, like toys, bottles, or surfaces, the virus can live on those objects for several hours. If the child then encounters those same objects and touches their own mouth, nose, or eyes, the bacteria can infect them as well.

Many viruses and bacteria that cause croup have vaccines available, which is the most effective way to reduce the occurrence or severity of disease. Vaccines are available for flu, COVID, measles, h flu, and diphtheria. There is also a new vaccine available for RSV. Spread can also be prevented through frequent handwashing with warm, soapy water and regularly wiping down surfaces, toys, and objects in shared spaces, especially at childcare centers or schools. Staying home or wearing a mask when symptomatic or feeling ill can also help prevent the spread.

Slide 4: Signs and Symptoms

Symptoms of croup begin like a common cold with runny nose and mild cough, maybe decreased appetite or fussiness as well. The symptoms progress to a loud, barksy sounding cough as coughing moves past the swollen, irritated voice box. Other symptoms include fever, hoarse voice, noisy breathing (especially when upset or crying), and increased respiratory effort. Croup is usually diagnosed from symptoms, but patients may also test positive for one of any number of viruses. The narrowed airway is also easily seen on an x-ray and is called the steeple sign because it looks like a pointed church steeple.

Slide 5: Treatment

Because croup is typically caused by a virus, it cannot be treated with antibiotics. Treatment is primarily supportive care. You can give medications for fever or discomfort, like Tylenol. Infants older than six months can take Ibuprofen. Push small amounts of fluids frequently, use a cool mist humidifier, and use comfort measures to try to keep the child from crying, which only makes the coughing worse. Sometimes, children who are coughing excessively, unable to sleep, or having difficulty breathing may need some extra care from their healthcare provider, like oral steroids or even an epinephrine nebulizer, to relieve swelling and reduce cough. Hospitalization and IV fluids may be needed in severe cases, but not this is rare. Regardless of how much supportive care is needed, symptoms tend to resolve within 10-14 days.

Slide 6: Potential Complications

The biggest risks with croup include dehydration, hypoxia (low oxygen levels in the blood), and respiratory failure. If the swelling in the airway becomes severe, it is harder and harder for air to pass through the tiny opening. Eventually, children can't exchange air at all, which is a medical emergency.

Slide 7: Red Flags

Red flags that indicate the airway is swelling to a dangerous level include high-pitched whistling sound whenever children are breathing, even when they're not crying. Drooling or difficulty swallowing is another issue to note. Restlessness or anxiety, which then progresses to lethargy can be dangerous. Using abdominal or neck muscles to breathe, breathing faster than normal, and blue discoloration to the nose, mouth, or fingernails are all red flags as well.

Slide 8: Sources

3. Common Respiratory Diseases Baby demonstration:
 - a. Hold the Common Respiratory Diseases Baby and turn it on, choosing the Croup setting.
 - b. Pass it around and encourage students to hold it.
 - c. When everyone has had a chance to observe and take a closer look, ask students to identify some of the signs and symptoms of croup they observed in the infant.
 - d. Review what they have learned about caring for an infant with croup.
4. Share a brief video about croup and infants. Here are a few to choose from:

Croup Cough Sound and Treatment
<https://www.youtube.com/watch?v=cbNkwDLYpXY>

What is croup?
<https://www.youtube.com/watch?v=8TBKMn0I9Tk>

Croup in babies
<https://www.youtube.com/watch?v=QmC3UHbQFI>

Name: _____ Class: _____

Croup Notes Page

Instructions: Take notes on the topic as the slide presentation is shared.

1. What is croup?
2. Croup causes _____ and _____ of the airway.
3. Causes of croup include:
4. To prevent the spread of croup:
5. Signs and Symptoms
6. Treatment for croup:
7. Time: Most illness lasts _____ days.
8. Potential Complications and Red Flags

Croup Notes Page – Answer Key

Instructions: Take notes on the topic as the slide presentation is shared.

1. What is croup? A viral infection of the airway.

1. Croup causes swelling and narrowing of the airway.

2. Causes of croup include:

- Air
- Direct contact
- Contaminated surfaces

9. To prevent the spread of croup:

- Vaccines
- Frequent handwashing
- Wiping down surfaces
- Stay home
- Wear a mask

10. Signs and Symptoms

- Begins with cold symptoms
- Runny nose, mild cough
- Decreased appetite, fussiness
- Progresses to:
- Loud, barky sounding cough
- Fever
- Hoarse voice
- Noisy breathing when upset/crying
- Increased work of breathing

11. Treatment for croup:

- Medications for fever and discomfort
- Hydration
- Cool mist humidifier
- Try to keep crying minimal
- Extra help when needed

- **Oral steroids (reduce airway swelling)**
- **Epinephrine nebulizer (reduces swelling)**
- **Hospitalization**
- **IV fluids**

12. Time: Most illness lasts **10-14** days.

13. Potential Complications and Red Flags

- **Dehydration**
- **Hypoxia**
- **Respiratory failure**

Lesson Four – Croup

REVIEW: Croup Case Study and Scenarios

15 minutes

Purpose:

Provide a problem-solving experience for students to reduce coughing in a child with croup and demonstrate methods to reduce the spread of causative organisms.

Materials:

- *Croup Case Study*
- *Croup Case Study* – Answer Key
- Common Childhood Respiratory Diseases Scenario Cards

Facilitation Steps:

1. Divide the class into four small groups. Give each group one of the croup scenario cards.
2. Have the groups read the scenario and discuss it among themselves. They should read and answer the question(s) found on the scenario card.
3. Call the class back together with each small group reading their brief scenario and the solution they arrived at.
4. Distribute the *Croup Case Study* to students and put students into groups of three or four to complete the *Croup Case Study* together.
5. Review the *Croup Case Study* as a class.
6. Complete the case study questions and have each small group come to a consensus on the right answers. Have the answer key available for reference as needed.

Name: _____ Class: _____

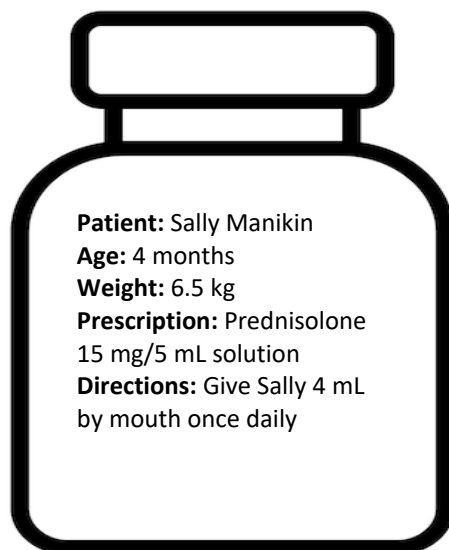
Croup Case Study

You're babysitting Greg, a four-month-old child, who was recently diagnosed with croup. His mother leaves care instructions to keep his coughing minimal and administer him oral steroid at 9 a.m. You are playing with Greg, and he begins laughing. This leads to a coughing fit.

What can you do to reduce the coughing?

When it is time for Greg's nap, what can you do to make sure his coughing is minimal while he sleeps?

Using the following medication label, draw a line on where you would fill the syringe to dose Greg.



What are some symptoms that would warrant calling Greg's mother?

Croup Case Study – Answer Key

You're babysitting Greg, a four-month-old child, who was recently diagnosed with croup. His mother leaves care instructions to keep his coughing minimal and administer him oral steroid at 9 a.m. You are playing with Greg, and he begins laughing. This leads to a coughing fit.

What can you do to reduce the coughing?

Medications for fever and discomfort
Tylenol or, if older than 6 months, Ibuprofen
Hydration

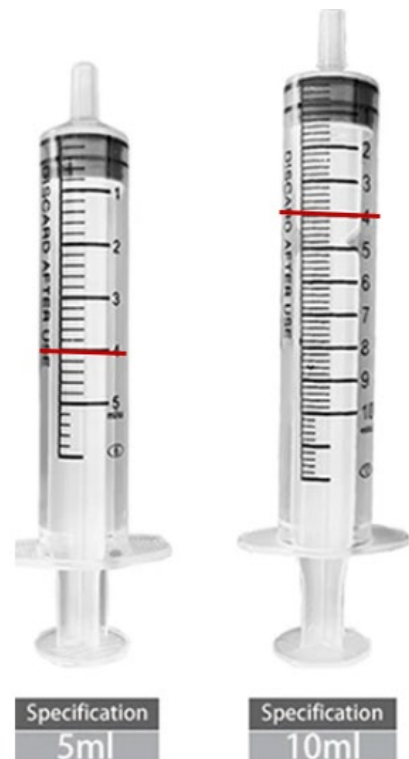
Cool mist humidifier
Try to keep crying minimal

When it is time for Greg's nap, what can you do to make sure his coughing is minimal while he sleeps?

Medications for fever and discomfort
Tylenol or, if older than 6 months, Ibuprofen

Hydration
Cool mist humidifier
Try to keep crying minimal

Using the following medication label, draw a line on where you would fill the syringe to dose Greg.



What are some symptoms that would warrant calling Greg's mother?

- High-pitched whistling sound when breathing in and out
- Drooling or difficulty swallowing
- Restless and anxious
- Lethargic and difficult to rouse
- Using abdominal or neck muscles to breathe
- Breathing faster than normal
- Blue discoloration around the face/mouth or fingernails

Lesson Five – Pneumonia

Lesson Overview

This lesson provides an overview of the causes, symptoms, and treatment of pneumonia. Students will demonstrate understanding of causative organisms for pneumonia, differentiate presentation depending on cause, and identify complications and red flags with pneumonia infection.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify the various causes of pneumonia and how their prevention and symptoms may differ
- Identify signs and symptoms of pneumonia in an infant
- Discuss treatment methods that may help with pneumonia in infants
- Identify red flags associated with complications of pneumonia

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS	• <i>Types of Pneumonia Worksheet</i> • <i>Types of Pneumonia Worksheet – Answer Key</i>	1. Print/photocopy the <i>Types of Pneumonia Worksheet</i> (one per participant). 2. Have the answer key available for reference.	15 minutes
LEARN	• <i>Pneumonia</i> slide presentation • <i>Pneumonia Notes Page</i> • <i>Pneumonia Notes Page – Answer Key</i> • Common Respiratory Diseases Baby	1. Print/photocopy the <i>Pneumonia Notes Pages</i> for each participant. 2. Prepare the <i>Pneumonia</i> slide presentation for viewing. 3. Read the provided lecture notes. 4. Prepare the Common Respiratory Diseases Baby for demonstration.	30 minutes
REVIEW	• <i>Pneumonia Test</i> • <i>Pneumonia Test – Answer Key</i> • Common Childhood Respiratory Diseases Scenario Cards	1. Print/photocopy the <i>Pneumonia Test</i> (one per participant). 2. Have the answer key available for reference. 3. Prepare the pneumonia scenario cards for discussion.	15 minutes

Lesson Five – Pneumonia

FOCUS: Pneumonia Types

15 minutes

Purpose:

Help students identify differences and similarities between several types (causes) of pneumonia.

Materials:

- *Types of Pneumonia Worksheet*
- *Types of Pneumonia Worksheet – Answer Key*

Facilitation Steps:

1. Distribute the *Types of Pneumonia Symptom Worksheet*.
2. Allow students to pair up to complete the worksheet.
3. Review the worksheet as a class using the *Types of Pneumonia Worksheet – Answer Key*.

Name: _____ Class: _____

Types of Pneumonia Worksheet

Instructions: Mark each characteristic of the several types of pneumonia with an X on the table below.

	Bacterial	Viral	Mycoplasma (Walking Pneumonia)
Sudden onset			
Slower onset of symptoms			
Long lingering symptoms			
Fever			
Cough			
Positive sputum culture			
More active and appearing less ill			
Incidence can be reduced with vaccination			
Fussiness			
Treated with antibiotics			
Decreased appetite			

Types of Pneumonia Worksheet – Answer Key

Instructions: Mark each characteristic of the several types of pneumonia with an X on the table below.

	Bacterial	Viral	Mycoplasma (Walking Pneumonia)
Sudden onset	X		
Slower onset of symptoms		X	
Long lingering symptoms			X
Fever	X	X	X
Cough	X	X	X
Positive sputum culture	X		
More active and appearing less ill			X
Incidence can be reduced with vaccination	X	X	
Fussiness	X	X	X
Treated with antibiotics	X		X
Decreased appetite	X	X	X

Lesson Five – Pneumonia

LEARN: Pneumonia Lecture and Demonstration

30 minutes

Purpose:

Discuss the causes, symptoms, and treatment of pneumonia as well as care of the infant with the pneumonia in a school or childcare setting.

Materials:

- *Pneumonia* slide presentation
- *Pneumonia Notes Page*
- *Pneumonia Notes Page – Answer Key*
- Common Respiratory Diseases Baby

Facilitation Steps:

1. Distribute the *Pneumonia Notes Page* and encourage students to take notes during the lecture.
2. Read the following material from the lecture:

Slide 1: Introductory slide

Lesson five is about pneumonia

Slides 2-3: Overview and Causes

Pneumonia is an infection of the lungs, specifically the alveoli, the small air sacs at the end of the airways. These sacs fill up with pus or fluid and are unable to inflate and exchange oxygen and carbon dioxide as they are supposed to. Pneumonia can be caused by a variety of pathogens, usually viral when in children. Potential viruses include RSV, flu, coronavirus, and parainfluenza, though any virus can turn into pneumonia. It can also be caused by bacteria, including pneumococcal, streptococcal, and pertussis, and mycoplasma (an atypical bacteria).

Children who were born prematurely, have heart or lung conditions, or have compromised immune systems are more at risk.

Pneumonia itself is not contagious, though the viruses and bacteria that cause it are. Illnesses spread from person to person. Some children may only have mild cold symptoms, or even croup or bronchiolitis. Others develop pneumonia from the same pathogen. It depends on how the germs affect the body and where they attack. One of the best methods to prevent pneumonia is through vaccination. Many of the illnesses that cause pneumonia have available vaccines, including flu, COVID, the new RSV vaccine, pneumococcal, and pertussis. Pregnant women can even get these vaccines during pregnancy to pass down antibodies to their newborn until they are old enough to get their own vaccines.

As with any other type of germ, good handwashing and sanitizing toys, objects, and surfaces in shared spaces can help prevent the spread. Staying home or wearing a mask when you are sick are also ways to prevent the spread of illness.

Slide 4: Anatomy of the Lungs

Here is a little refresher on lung anatomy. You can think about the lungs like a bunch of grapes with larger branches or stems that move inward to smaller branches and then end with the grapes at the end of the smallest branches. In the lungs, the larger airways that connect to the trachea are called the bronchi. These branch into progressively smaller airways that are called the bronchioles. At the end of the bronchioles are air-filled sacs that are called alveoli. The alveoli have capillaries that wrap around them; this is where the air exchanges gases, like oxygen and carbon dioxide, with the bloodstream.

In pneumonia, the alveoli fill up with fluid or pus, which makes it much more difficult for them to inflate and exchange gases easily. This can be lobar pneumonia, where one or more sections are affected or bronchial pneumonia affecting patches in both lungs.

Slide 5: Signs and Symptoms

Signs and symptoms of pneumonia vary by the type or causative organism. Bacterial pneumonia comes on suddenly with cough (usually coughing up mucous), chest pain, decreased appetite, vomiting, fever, and fatigue. Viral pneumonia has many of the same symptoms, though they may develop more slowly or be milder and may also include wheezing and less mucous. Mycoplasma pneumonia, also called walking pneumonia, presents a little differently. It is called walking pneumonia because children tend to be more active and appear less ill. They may start with fever and cough, as well as cough up mucous, and then the cough persists for three to four weeks with few other symptoms.

All types of pneumonia include fever, fussiness, and decreased appetite and activity level. Pneumonia and its causative organism are diagnosed based on clinical appearance, breathing problems, lung sounds, pulse oximetry, chest x-ray, and blood and sputum cultures, which check blood or mucous for bacteria.

Slide 6: Treatment

Treatment is based on the type of pneumonia, with bacterial pneumonia requiring antibiotics. Viral pneumonia does not need antibiotics and is primarily managed with supportive care. Supportive care can be useful for all types of pneumonia. Fever reducers (Tylenol and Ibuprofen), pushing fluids, and running a cool mist humidifier are all helpful. Children with more severe symptoms, particularly difficulty breathing, may require extra support, like hospitalization, oxygen, nebulizer treatments, or even a ventilator. They may also need IV fluids or IV antibiotics if they are too ill to take much orally.

Slide 7: Potential Complications

Potential complications of pneumonia include dehydration, hypoxia, respiratory failure, and secondary infections. Potential secondary infections include sepsis and viral pneumonia that becomes secondary pneumonia when bacteria harbor in excessive mucous.

Slide 8: Red Flags

Watch out for signs of dehydration, lethargy, increased work of breathing, blue or gray discoloration of the face and mouth, pauses in breathing, fever lasting longer than 72 hours, or symptoms that are continually getting worse after a week or so or that seemed to be getting better and then worsened again.

Slide 9: Sources

3. Common Respiratory Diseases Baby demonstration:
 - a. Hold the Common Respiratory Diseases Baby and turn it on, choosing the pneumonia setting.
 - b. Pass it around and encourage students to hold it.
 - c. When everyone has had a chance to observe and take a closer look, ask students to identify some of the signs and symptoms of pneumonia they observed in the infant.
 - d. Review what they have learned about caring for an infant with pneumonia.
4. Share a brief video about pneumonia and infants. Here are a few to choose from:

Pneumonia in Children
<https://www.youtube.com/watch?v=sMB7Hq-1Zc&t=56s>

Pneumonia
<https://www.youtube.com/watch?v=6SayKOKlhLU>

Pneumonia in Children
<https://www.youtube.com/watch?v=RhBbZLyUBkE>

Name: _____

Class: _____

Pneumonia Notes Page

Instructions: Take notes on the topic as the slide presentation is shared.

1. Pneumonia is an infection of the _____.
2. Pneumonia can be caused by _____ but can also be from _____.
3. Pneumonia itself is _____ contagious, but the viruses and bacteria that cause it _____.
4. To prevent the spread of pneumonia:

5. Signs and Symptoms of Pneumonia

6. Treatments for children with pneumonia include:

7. Potential Complications and Red Flags

Pneumonia Notes Page – Answer Key

Instructions: Take notes on the topic as the slide presentation is shared.

1. Pneumonia is an infection of the lungs.
2. Pneumonia can be caused by viruses but can also be from bacteria.
3. Pneumonia itself is not contagious, but the viruses and bacteria that cause it are.
4. To prevent the spread of pneumonia:

- Vaccines
- Frequent handwashing
- Wiping down surfaces
- Stay home
- Wear a mask

5. Signs and Symptoms of Pneumonia

Bacterial:

- Sudden onset
- Cough
- Pain in the chest
- Vomiting and decreased appetite
- Fever
- Fatigue

Viral:

- Similar to bacteria
- Develops more slowly, more mild
- Wheezing

Mycoplasma/Walking Pneumonia:

- May be more active appearing less ill
- Fever and cough
- Persistent cough 3-4 weeks
- Coughing up mucous

6. Treatment for children with pneumonia include:

- **Antibiotics for bacterial pneumonia**
- **Hydration**
- **Cool mist humidifier**

7. Potential Complications and Red Flags

- **Dehydration**
- **Hypoxia**
- **Respiratory failure**
- **Secondary infection**

Lesson Five – Pneumonia

REVIEW: Pneumonia Post Test

15 minutes

Purpose:

Assess knowledge and understanding about pneumonia and its management.

Materials:

- *Pneumonia Test*
- *Pneumonia Test – Answer Key*
- Common Childhood Respiratory Diseases Scenario Cards

Facilitation Steps:

1. Divide the class into four small groups. Give each group one of the pneumonia scenario cards.
2. Have the groups read the scenario and discuss it amongst themselves. They should read and answer the question(s) found on the scenario card.
3. Call the class back together with each small group reading their brief scenario and the solution they arrived at.
4. Distribute the *Pneumonia Test* to students.
5. Allow students to complete the test.
6. Review the test and correct answers as a class using the *Pneumonia Test – Answer Key* so that students may learn from reviewing correct answers.

Name: _____

Class: _____

Pneumonia Test

Instructions: Circle the correct answer to each of the following questions.

1. Which part of the lungs fill with fluid or pus in a pneumonia infection?
 - a. Trachea
 - b. Bronchi
 - c. Bronchioles
 - d. Alveoli
2. True or False: Vaccines help reduce the occurrence of pneumonia in children.
 - a. True
 - b. False
3. What causes pneumonia?
 - a. Genetics
 - b. Viruses only
 - c. Bacteria only
 - d. Viruses and bacteria
4. Which type of pneumonia comes on very suddenly with more serious symptoms?
 - a. Bacterial
 - b. Viral
 - c. Walking pneumonia
 - d. Fungal
5. Which symptom is usually present for all types of pneumonia?
 - a. All lobes affected on chest x-ray
 - b. Sputum culture positive for bacteria
 - c. Fever
 - d. Wheezing
6. Viral pneumonia is usually treated with _____.
 - a. Supportive care
 - b. Antibiotics
 - c. Hospitalization
 - d. Mechanical ventilation
7. Which is not a potential complication of viral pneumonia?
 - a. Hypoxia
 - b. Steeple sign on x-ray
 - c. Secondary infection of bacterial pneumonia
 - d. Dehydration
8. Which is a sign of hypoxia or low oxygen level in a baby?
 - a. Sunken fontanelle
 - b. Lethargy or sleeping more than normal
 - c. Blue discoloration around the mouth and nose
 - d. High-pitched whistling sound when breathing

Pneumonia Test – Answer Key

1. Which part of the lungs fill with fluid or pus in a pneumonia infection?
 - a. Trachea
 - b. Bronchi
 - c. Bronchioles
 - d. Alveoli**
2. True or false: Vaccines help reduce the occurrence of pneumonia in children.
 - a. True**
 - b. False
3. What causes pneumonia?
 - a. Genetics
 - b. Viruses only
 - c. Bacteria only
 - d. Viruses and bacteria**
4. Which type of pneumonia comes on very suddenly with more serious symptoms?
 - a. Bacterial**
 - b. Viral
 - c. Walking pneumonia
 - d. Fungal
5. Which symptom is usually present for all types of pneumonia?
 - a. All lobes affected on chest x-ray
 - b. Sputum culture positive for bacteria
 - c. Fever**
 - d. Wheezing
6. Viral pneumonia is usually treated with _____.
 - a. Supportive care**
 - b. Antibiotics
 - c. Hospitalization
 - d. Mechanical ventilation
7. Which is not a potential complication of viral pneumonia?
 - a. Hypoxia
 - b. Steeple sign on x-ray**
 - c. Secondary infection of bacterial pneumonia
 - d. Dehydration
8. Which is a sign of hypoxia or low oxygen level in a baby?
 - a. Sunken fontanelle
 - b. Lethargy or sleeping more than normal
 - c. Blue discoloration around the mouth and nose**
 - d. High pitched whistling sound when breathing

Lesson Six – Asthma

Lesson Overview

This lesson provides an overview of the causes, symptoms, and treatment of asthma. Students will demonstrate use of an asthma action plan as well as understanding of different triggers and red flags for children with asthma.

Lesson Objectives

After completing this lesson, participants will be able to:

- Discuss the potential causes of asthma and what triggers a child may experience
- Identify signs and symptoms of an asthma exacerbation in a child
- Demonstrate use of an asthma action plan to navigate symptom management
- Identify red flags associated with complications of asthma

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS	• <i>Asthma Pre-Test</i> • <i>Asthma Pre-Test – Answer Key</i>	1. Print/photocopy the <i>Asthma Pre-Test</i> (one per participant).	15 minutes
LEARN	• <i>Asthma</i> slide presentation • <i>Asthma Notes Page</i> • <i>Asthma Notes Page – Answer Key</i> • Common Respiratory Diseases Baby	1. Print/photocopy the <i>Asthma Notes Page</i> for each participant. 2. Prepare the <i>Asthma</i> slide presentation for viewing. 3. Read the provided lecture notes. 4. Prepare the Common Respiratory Diseases Baby for demonstration.	30 minutes
REVIEW	• <i>Asthma Case Study</i> • <i>Asthma Action Plan</i> • Common Childhood Respiratory Diseases Scenario Cards	1. Print/photocopy <i>Common Cold Case Study</i> for each participant. 2. Display or photocopy the four asthma scenario cards, one for each small group.	15 minutes

Lesson Six – Asthma

FOCUS: Asthma

15 minutes

Purpose:

Assess existing knowledge about asthma and its management.

Materials:

- *Asthma Pre-Test*
- *Asthma Pre-Test* – Answer Key

Facilitation Steps:

1. Distribute the *Asthma Pre-Test* to students.
2. Allow students to complete the test
3. Review the test and correct answers as a class using the *Asthma Pre-Test* – Answer Key so that students may learn from reviewing correct answers.
4. Introduce asthma with a short video: Asthma in Babies and Children
<https://www.youtube.com/watch?v=BMI1VQhkizU&t>

Name: _____

Class: _____

Asthma Pre-Test

Instructions: Circle the correct answer to each of the following questions.

1. Which is a potential cause of asthma in children?
 - a. Bacterial infection
 - b. Viral infection
 - c. Genetics
 - d. Radiation
2. Which is not a risk factor for developing asthma?
 - a. Cigarette smoke in the home
 - b. Being behind on vaccines
 - c. A parent with asthma
 - d. Being obese
3. Which is an outdoor trigger for asthma symptoms?
 - a. Pollen
 - b. Pet dander
 - c. Dust
 - d. Exercise
4. What types of airway overreaction occur in asthma? (Choose all that apply)
 - a. Tightening of muscles around the airway
 - b. Increased production of mucous in the airway
 - c. Narrowing and irritation around the larynx (voice box)
 - d. Swelling of the lining of the airway
5. What are quick relief medications used for?
 - a. Control and prevent symptoms and exacerbations
 - b. Respiratory failure emergencies
 - c. Reduce mucous production
 - d. Short-term relief of acute symptoms
6. For children with frequent or severe symptoms, they may need _____.
 - a. Occasional quick relief medications
 - b. Daily asthma control medications
 - c. Mechanical ventilator
 - d. Daily steroid injections
7. An asthma action plan is used to _____.
 - a. Provide guidance about medications to use or actions to take depending on symptoms
 - b. Keep a list of emergency services available near the patient
 - c. Provide a summary of past asthma attacks for doctors to review
 - d. Explain when to use antibiotics for asthma symptoms
8. True or False: Children with asthma miss more school than their peers without asthma.
 - a. True
 - b. False

Asthma Pre-Test – Answer Key

1. Which is a potential cause of asthma in children?
 - a. Bacterial infection
 - b. Viral infection
 - c. Genetics**
 - d. Radiation
2. Which is not a risk factor for developing asthma?
 - a. Cigarette smoke in the home
 - b. Being behind on vaccines**
 - c. A parent with asthma
 - d. Being obese
3. Which is an outdoor trigger for asthma symptoms?
 - a. Pollen**
 - b. Pet dander
 - c. Dust
 - d. Exercise
4. What types of airway overreaction occur in asthma? (Choose all that apply)
 - a. Tightening of muscles around the airway**
 - b. Increased production of mucous in the airway**
 - c. Narrowing and irritation around the larynx (voice box)
 - d. Swelling of the lining of the airway**
5. What are quick relief medications used for?
 - a. Control and prevent symptoms and exacerbations
 - b. Respiratory failure emergencies
 - c. Reduce mucous production
 - d. Short term relief of acute symptoms**
6. For children with frequent or severe symptoms, they may need _____.
 - a. Occasional quick relief medications
 - b. Daily asthma control medications**
 - c. Mechanical ventilator
 - d. Daily steroid injections
7. An asthma action plan is used to _____.
 - a. Provide guidance about medications to use or actions to take depending on symptoms**
 - b. Keep a list of emergency services available near the patient
 - c. Provide a summary of past asthma attacks for doctors to review
 - d. Explain when to use antibiotics for asthma symptoms
8. True or False: Children with asthma miss more school than their peers without asthma.
 - a. True**
 - b. False

Lesson Six – Asthma

LEARN: Asthma Lecture and Demonstration

30 minutes

Purpose:

Discuss the causes, symptoms, and treatment of asthma as well as how to care for a child with asthma in a school or childcare setting.

Materials:

- *Asthma* slide presentation
- *Asthma Notes Page*
- *Asthma Notes Page – Answer Key*
- Common Respiratory Diseases Baby

Facilitation Steps:

1. Distribute the *Asthma Notes Page* and encourage students to take notes during the lecture.
2. Read the following material from the lecture:

Slide 1: Introductory slide
Lesson six is about asthma.

Slide 2-3: Overview and Causes

Unlike the other illnesses we've discussed so far, which are infectious, asthma is a chronic dysfunction of the airways, characterized by over-reactivity to triggers. This can include swelling of the airway lining, muscles tightening around the airways, and increased mucous production in the airways, all of which shrink the actual airways and keep air from passing through them as easily as it should.

There are several potential causes that usually work in combination, including a genetic predisposition or strong family history, environmental triggers (like pollution or cigarette smoke), and an overactive immune system.

People most at risk of developing asthma include children ages 5-17 and those with a family history of asthma, nasal allergies, food allergies, skin allergies, exposure to air pollution or smoke, and obesity. Triggers that lead to the airway narrowing and mucous production vary by person but might include exercise or physical activity, indoor triggers (pet dander, dust, and mold), or outdoor allergens (pollen, mold, and temperature or moisture fluctuations or extremes).

Slide 4: Signs and Symptoms

Types and severity of symptoms vary from person to person. They might come and go with triggers and be frequent or infrequent. Typical symptoms include coughing (either day or night), wheezing, trouble breathing with activity, chest tightness, low oxygen level on pulse ox, and reduced ability to inhale or exhale an appropriate amount of air.

Slide 5: Treatment

Potential treatment is as varied as the symptoms. First, there are quick-relief medications, which are used alone or in combination with asthma control medications. They're used for short-term relief of acute symptoms, like coughing or shortness of breath. These can be bronchodilators, like albuterol, which relax the muscle constriction around the airways or oral or injected steroids that reduce the airway inflammation.

There are also asthma control medications, which are used daily to control or prevent symptoms in children with frequent or moderate to severe symptoms. These include inhaled steroids, like Flonase or Advair, which reduce airway inflammation as well as oral medications, like Singulair, that reduce allergy response and airway inflammation.

Slide 6: Asthma Action Plan

For children with asthma, especially for those who attend school or play sports, it is recommended to have an asthma action plan for caregivers to consult and navigate symptom management. These can look different based on your facility. There are many examples you can look up online, but they all basically have the same structure of green, yellow, and red zones with details of symptoms and actions to be taken depending on what is happening.

Typically, the green zone means no symptoms and no effect on activities. If a child takes a daily medication, they should take it when in the green zone. If the child has acute medications, they may use them preventatively before exercise. This is also a good place to identify and list triggers. The yellow zone is where there are some symptoms, maybe coughing, wheezing, chest tightness, or nighttime waking with coughing. They may experience more symptoms with activity but can still do some things. Children in the yellow zone should take their daily medications as prescribed and use acute or rescue medications, like albuterol. The hope is that within an hour, their symptoms improve. If not, they can use the medication again and are advised to contact their doctor. If those symptoms worsen or persist for more than 24 hours, they progress to the red zone. In this zone, children should use rescue medications and contact their doctor or seek emergency care.

Slides 7-8: Potential Complications and Red Flags

Potential complications include severe asthma attack, which does not respond to typical rescue inhalers and might look like a child in the tripod position, not moving a lot of air or wheezing very loudly, or has blue discoloration around their nose or mouth.

A severe asthma attack can progress to respiratory failure, which is an emergency. On a milder scale, children with asthma are more likely to miss school or social events and may have lasting damage to their airways.

Slide 9: Sources

3. Common Respiratory Diseases Baby demonstration:
 - a. Hold the Common Respiratory Diseases Baby and turn it on, choosing the asthma setting.
 - b. Pass it around and encourage students to hold it.
 - c. When everyone has had a chance to observe and take a closer look, ask students to identify some of the signs and symptoms of asthma they observed in the infant.
 - d. Review what they have learned about caring for an infant with asthma.
4. Share a brief video about asthma and infants. Here are a few to choose from:
 - Asthma in Babies and Children
<https://www.youtube.com/watch?v=gU8kk0CddNY>
 - 10 Things to Know about Asthma in Children
<https://www.youtube.com/watch?v=LT588Mkf1p8>
 - Help a Child Suffering from an Asthma Attack
<https://www.youtube.com/watch?v=y4gburcET5I&t=14s>

Name: _____ Class: _____

Asthma Notes Page

Instructions: Take notes on the topic as the slide presentation is shared.

1. Asthma is a _____ of the airways, characterized by over-reactivity to triggers.
2. What are triggers of asthma?
3. Risk factors for asthma in children include:
4. Types and severity of asthma _____ from person to person.
5. Signs and symptoms of asthma may include:

6. Quick-relief medication treatments for asthma include:

7. Asthma control medication treatment guidelines:

8. Asthma Action Plan Zones:

Green

Yellow

Red

9. Potential Complications and Red Flags

Asthma Notes Page – Answer Key

Instructions: Take notes on the topic as the slide presentation is shared.

1. Asthma is a **chronic dysfunction** of the airways, characterized by over-reactivity to triggers.

2. What are triggers of asthma?

- **Swelling of the lining of the airway**
- **Tightening of muscles around the airways**
- **Increased mucous production in the airways**

3. Risk factors for asthma in children include:

- **Ages 5-17 years**
- **Family history of asthma**
- **Nasal allergies, food allergies, skin allergies**
- **Exposure to tobacco smoke and/or air pollution**
- **Obesity**

4. Types and severity of asthma **vary** from person to person.

5. Signs and symptoms of asthma may include:

- **Coughing, either day or night**
- **Wheezing**
- **Trouble breathing with activity**
- **Chest tightness**
- **Low oxygen level on pulse ox**
- **Reduced ability to inhale or exhale an appropriate amount of air.**

6. Quick-relief medication treatments for asthma include:

- **Used alone or in combination with asthma control medications**
- **Used for short-term relief of acute symptoms, like coughing and shortness of breath**
- **Bronchodilator inhaler**
- **Oral or injected steroids**

7. Asthma control medication treatment guidelines:

- **Used daily to control and prevent symptoms and exacerbations**

- For children with frequent or severe symptoms
- Inhaled steroids
- Reduce airway inflammation
- Oral medications
- Reduce allergic response and airway inflammation

8. Asthma Action Plan Zones:

Green Zone: This means there are no symptoms and no effect on activities. If a child takes a daily medication, they should take it when in the green zone. If they have acute medications, they may use them preventatively before exercise. This is also a good place to identify and list triggers.

Yellow Zone: This means there are some symptoms, maybe coughing, wheezing, chest tightness, or nighttime waking with coughing. They may experience more symptoms with activity but can still do some things. Children in the yellow zone should take their daily medications as prescribed and use acute or rescue medications, like albuterol. The hope is that within an hour, their symptoms improve. If not, they can use the medication again and are advised to contact their doctor.

Red Zone: If those symptoms worsen or persist for more than 24 hours, they progress to the red zone. In this zone, children should use rescue medications and contact their doctor or seek emergency care.

9. Potential Complications and Red Flags

- Severe asthma attack
- Respiratory failure
- Missed school and social events
- Long-lasting damage to airways

Lesson Six – Asthma

REVIEW: Asthma Case Study and Scenarios

15 minutes

Purpose:

Provide experience for students to use an asthma action plan and determine what care a child with asthma needs while at a childcare setting.

Materials:

- *Asthma Case Study*
- *Asthma Action Plan*
- Common Childhood Respiratory Diseases Scenario Cards

Facilitation Steps:

1. Divide the class into four small groups. Give each group one of the asthma scenario cards.
2. Have the groups read the scenario and discuss it among themselves. They should read and answer the question(s) found on the scenario card.
3. Call the class back together with each small group reading their brief scenario and the solution they arrived at.
4. Distribute the *Asthma Case Study* and *Asthma Action Plan* to students.
5. Place students in groups of three or four to complete the *Asthma Case Study* together.
6. Review the *Asthma Case Study* as a class. Have each small group share their answers to the questions and discuss what the best course of action should be.

Name: _____ Class: _____

Asthma Case Study

You work at a daycare where a child named Cassandra has a diagnosis of asthma. This morning, you notice Cassandra coughing intermittently, especially after spending time outdoors. It is springtime and the pollen count is high.

Consult Cassandra's Asthma Action Plan that is on file with the daycare and determine her triggers and what zone you think she is in.

What action should you take to manage Cassandra's asthma given her current symptoms and zone on the asthma action plan?

You administer an albuterol nebulizer that Cassandra keeps at the childcare center and within 15 minutes, her cough improves a little. About an hour later, Cassandra's cough is still present, though it is not as bad as it was before. However, now you can hear a faint wheezing sound when she breathes. What action should you take next? Should you contact Cassandra's parents?

Asthma Action Plan

Name: Cassandra Manikin

Green Zone: Doing well. No coughing, wheezing, or chest tightness. Can do usual activities.

Take daily medications.

Cassandra uses a fluticasone nebulizer twice a day at home

Be aware of triggers.

Cassandra's triggers are pollen and pet dander. Cool, wet weather is another trigger

Use preventative inhaler before exercise.

Not needed due to Cassandra's age

Yellow Zone: Some symptoms. One or more of coughing, wheezing, chest tightness, or nighttime waking. Can do some, but not all, usual activities.

Take green zone medications as usual *and* quick-relief medication.

Use albuterol nebulizer as needed.

If you do not return to normal within 1 hour, take quick-relief medications again and contact your doctor.

Use albuterol nebulizer again and call pediatrician.

Red Zone: Emergency. Very short of breath. Quick-relief medications have not helped. Symptoms are the same or worse after 24 hours in the yellow zone. Cannot do any activities.

Take quick-relief medication, call doctor right away.

Use albuterol.

If you cannot reach your doctor, call 911 or go to the nearest emergency department.

Asthma Case Study – Answer Key

You work at a daycare where a child named Cassandra has a diagnosis of asthma. This morning, you notice Cassandra coughing intermittently, especially after spending time outdoors. It is springtime and the pollen count is high.

Consult Cassandra's Asthma Action Plan that is on file with the daycare and determine her triggers and what zone you think she is in.

Her triggers are pollen and pet dander as well as cool, wet weather. She is in the yellow zone.

What action should you take to manage Cassandra's asthma given her current symptoms and zone on the asthma action plan?

Give her the green zone medications as usual *and* quick-relief medication. Use albuterol nebulizer as needed.

You administer an albuterol nebulizer that Cassandra keeps at the childcare center and within 15 minutes, her cough improves a little. About an hour later, Cassandra's cough is still present, though it is not as bad as it was before. However, now you can hear a faint wheezing sound when she breathes. What action should you take next? Should you contact Cassandra's parents?

Use albuterol nebulizer again and call a pediatrician. Yes, you should contact the parents.

Sources

1. Ben-Joseph, E.P. (2023). Pneumonia. Kids Health. <https://kidshealth.org/en/parents/pneumonia.html#:~:text=Kids%20with%20pneumonia%20caused%20by,cough%2C%20and%20sometimes%20fast%20breathing>.
2. Centers for Disease Control and Prevention. (2023). Asthma action plans. CDC. <https://www.cdc.gov/asthma/actionplan.html>
3. Drexler, C and Lockwood, K. (n.d.). Pneumonia in children. CHOP. <https://www.chop.edu/conditions-diseases/pneumonia-children>
4. Johns Hopkins Medicine. (n.d.). Asthma in children. <https://www.hopkinsmedicine.org/health/conditions-and-diseases/asthma/asthma-in-children#:~:text=Asthma%20Symptoms%20in%20Children&text=Symptoms%20may%20include%3A,while%20your%20child%20is%20active>
5. Mayo Clinic. (2022). Croup. Mayo Clinic. <https://www.mayoclinic.org/diseases-conditions/croup/symptoms-causes/syc-20350348>