Unit 4: Respiratory Infections

Contents

Background

Pneumonia is the leading cause of children's deaths in most poor nations.

- Household air pollution from cookstoves cause 3 million or more deaths a year, mostly from pneumonia.
- Second-hand smoke from tobacco causes an additional 600,000 deaths a year.[1]

Happily, we can prevent most serious lung diseases.

- Handwashing can help a lot in preventing the colds and flu that can turn into pneumonia.[2]
- Avoiding household air pollution with safe cooking and avoiding tobacco can save lives

Avoiding cold, flu and pneumonia helps increase school attendance and means students learn more when at school.

Objective for Unit 4: Respiratory Infections

- **Learning** If you sneeze and cough and serve food with hands not washed with soap you spread serious diseases and disgusting snot to yourself and your neighbors. Smoke from stoves or tobacco turns a mild cold into serious pneumonia.
- **Behavior**: Students treat sneeze and cough into their elbow, wash hands with soap, and avoid smoky cookstoves and tobacco. Students encourage others in these behaviors.

Reminder: You are the example

Make sure you always cover your cough and use a safe cookstove, both at home and school.

1 Lim, Stephen S., and Lidia Morawska. "A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010." *The Lancet* 380.9859 (2012): 2224-2260.

2 Rabie, Tamer, and Valerie Curtis. "Handwashing and risk of respiratory infections: a quantitative systematic review." *Tropical medicine & international health* 11.3 (2006): 258-267.

Presentation: Cold, flu and measles move from snot

Some germs live in our snot, like the cold, flu and measles. How do they get from a sick person to infect a new person?

How germs spread	Ill people can stop cold & flu germs from spreading by:	And healthy people can avoid germs by:
Sneezes and coughs into the air	covering their cough and sneeze	washing hands with soap
Sneezes and coughs onto hands	washing hands with soap	washing hands with soap
Saliva	using their own food and utensils	using their own utensils
Use stoves that make dangerous smoke that harms the body's defenses against germs		Avoid smoky cookfires

Fun facts

- Sneezes travel at 150 km / hour. No wonder germs spread so quickly!
    - a single sneeze can send 100,000 germs into the air.3
- Coughs only go about 100 km/ hour. Not as fast as sneezes, but still about 10 times faster than you can run!

3 Patti Wood, author of *Success Signals: Understanding Body Language*, cited in http://www.webmd.com/allergies/features/11-surprising-sneezing-facts

Demonstration: Show how far a cough can travel4

Objective: Show how far a cough or sneeze can travel.

Time: 5 minutes

What you need: About 15 torn up pieces of paper (each about a square centimeter).

- A piece of string about 4 meters long.

Preparation

Put the pieces of paper in your hand and make a slightly open fist.

Hold the fist to your mouth and cough vigorously into the opening. The paper should fly out. Keep practicing till the paper bits fly at least one meter.

4 Adapted from
http://www.btboe.org/files/_paL5Y_/9fa6f2124b2f1d053745a49013852ec4/District_Handwashing_Curriculum.pdf

Activity

Say:

> We have seen how diarrhea germs travel through water and on fingers. Now we are going to see how germs that cause colds and flu spread.
>
> If you have a cold or flu, your body releases germs when you cough or sneeze. What happens if you are close to me when I cough?

Put the pieces of paper in your hand and make a slightly open fist. Hold your hand in front of your mouth and cough vigorously into the opening. The paper should fly out at least a meter.

They should say: We get the germs on us / we breathe in the germs.

> Real sneeze travel up to 4 or 5 meters! How many of you are sitting within 4 meters of me? What happens to you when I sneeze?

They should say: We get the germs on us / we breathe in the germs.

Hold one end of the piece of string and have students walk the other end around about 4 meters away.

How many students are sitting within 4 meters of me?

Touch the paper and ask.

> What happens when you touch the paper?

They should say: We get the germs on our hands.

> What would happen if one of your friends touches the table with germs and then you?

They should say: We get the germs on us.

Discussion

Talk about ways to prevent the germs from spreading

- To stop germs spreading from a cough or sneeze
    - Cough and sneeze into an elbow
- To stop germs spreading from fingers that wiped noses and mouths or that touched a surface
    - Wash with soap before preparing food or eating
- To stop germs that move in saliva
    a. Do not share utensils, cups or glasses
    b. Do not pass food that has been in someone's mouth

Story: Gerry the Germ Returns: Bigger, Better and Booger!

Discussion questions

- What was the story about?
- What were some of the good parts of the story?
- What were some of the bad parts?
- If you could change a part of this story, what would you change? Why?
- Did you find the story long or short?

Board Game: Cold & Flu Germ Race

Objective: Learn how respiratory diseases travel and how to prevent them.

Time: 25 minutes

Ages 9 and above

What you need for each group of 2-4 students:

- One game board
- One six-sided die
- 4 tokens per player

Activity: See game board for instructions

Outdoor game: Cold & Flu Germ tag[5]

Objective: Learn how cold & flu germs spread and how handwashing and covering cough helps fight its spread

Time: 20 minutes

Age: 6 and up

Number of players: 4 or more (6 or more is best)

What you need

- Space for students to run around that has clearly marked boundaries
- Corner markers, stick or a chalk to make a smaller set of boundaries
- 10 soft balls, can be wadded up paper.
- Some form of noise-maker, such as a whistle or horn.

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[5] Adapted from Saskatoon Health Region, May 2012 http://www.saskatoonhealthregion.ca/your_health/documents/hand_washing/GermTagMay2012.pdf. Round 4 is adapted from LaJoie, "Classroom activity: Germ Tag!" *Teachable Spirit* [blog], March 8, 2012. http://lajoieward.wordpress.com/2012/03/08/classroom-activity-germ-tag/ , last accessed August 26, 2013.

- Name tags with sleep, eating well, exercise, cover your cough, handwashing, hand sanitizer etc. on them.

Preparation

Mark off a play area with the corner markers, stick, chalk, etc.

Activity

Have students sit in a circle in the middle of the play area. Explain that you are playing a game with more than one round. Each time they hear the noise-maker, they should come back and sit down where they are now.

Round 1 – designate 5 "sick" students. These students are "it." They should cover their mouth with one hand (to show they are sick) and try to tag other students. If a healthy student is tagged, they become "sick" and cover their mouth and try to tag other students. The round ends when all students (or at least the vast majority) are tagged sick.

Round 1 Discussion – when the students are back seated, discuss how long it took for everyone to get sick. What was it like for the few healthy at the end trying to stay away from so many sick people? Was it harder than at the start of the round when there were only 5 sick people? Discuss how people got sick in this round (through direct contact or touching someone else who is sick)

Round 2 – designate 5 "sick" students again. But, this time add the 10 soft balls (or wadded up pieces of paper). These are airborne viruses. If a healthy student is tagged by a "sick" person *or* hit with a "soft ball germ", they are sick too. The new sick people must try to tag the healthy people by touching them or hitting them with a ball. The round is over when everyone is "sick".

Round 2 Discussion – when students are back seated, discuss how long it took for everyone to get sick. Did people get sick faster with both direct touching *and* airborne germs?

Round 3 – designate 5 "sick" students again, and include the 10 soft balls (airborne germs) again. However, this time, shrink your space by half.

Round 3 Discussion - when students are back seated, discuss how long it took for everyone to get sick when they had so much less space. This is why we get sick more often when we are around lots of other people (like in school, on the bus, in church). The more dense the population, the easier it is for germs to spread.

Round 4: If a student is tagged, he or she must fall to the floor and sleep. Any un-tagged student can come and mime squirting soap on the fallen student. The sick student must act out washing hands and sneezing into his or her elbow, and is then unfrozen and returns to the game.

Round 4 discussion: It should have been slower to get sick (that is, easier to stay healthy) when sick people stay home and do not infect others.

If you have time…

Round 5 – repeat round 3 with the addition of "healthy habits". These students wear name tags with sleep, eating well, exercise, cover your cough, handwashing, hand sanitizer etc. on them. These students cannot get tagged sick, and can un-tag a "sick" student to make them healthy again. You may need to end this round based on time since you may not reach a point where everyone is sick.

Round 5 Discussion – when students are back, discuss the impact of healthy habits. The more healthy people there were spreading healthy habits (like handwashing), the harder it was for the unhealthy people to spread germs and make people sick.

Discussion: Tobacco

≪Need a short presentation or activity on risks of smoking + second-hand smoke. Xx search the web for one≫

Discussion: Smoky cookstoves

Objective: Students learn smoke from a cookstove is very dangerous, and ways to minimize smoke exposure.

≪See presentation Health messages & stoves.pptx ≫

Add respiratory infection topics to multi-topic activities

Skits, Poster, & Song on cold & flu topics

Objective: Reinforce cold & flu diagnosis, treatment, and prevention

Activity
Ask students to make a skit, poster and/or song on colds and flu, preventing colds and flu, and treating colds and flu and pneumonia.
See details of each activity in Handwashing Unit.

Skits on cold & flu topics

Sample topics for the skits

- Billy is sick and sneezes all over. How do classmates react?
- A wife and mother is Queen of her home. (Image of a queen in a white outfit.)
    - Then she spends hours a day in a smoky kitchen. (Overlay red eyes, dingy outfit, smelly clothes, snotty nose, cough.)
    - Is this the image of a Queen? One who is respected by neighbors? One who makes her husband proud?
    - If she had a safe stove, we would have a real Queen. (Restore clean queen image.)
- Smoke from a cookstove is a tiger or snake, harming people. Would you let a snake into your home? Then why let in smoke that harms?

Sample activity for Poster on respiratory infections 6

Objective: Make sneeze pictures to illustrate how germs spread when you do not cover your mouth when sneezing.

What you need: spray bottle and food coloring

Ages: 5-8

Activity

- Each child gets a piece of white paper
- Have the children pretend to sneeze, and then spray their pictures with colored water.

Students love this activity and talk about it for quite some time.

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6 Suggested by Monica at http://www.perpetualpreschool.com/preschool_themes/germs/art.htm

Practice explaining about colds & flu

Objective: Have students practice explaining to a younger sibling how to prevent respiratory infections.

Time: 10 minutes

Ages: 7 and up

Activity

Have students practice explaining to a younger sibling how to prevent respiratory infections. That is, students should explain to one another as if explaining to a younger brother or sister. Then they should go home and teach their younger family members.

Have students give feedback to each other to make sure the basic lessons are covered:

- Wash hands with soap to prevent spreading or getting a cold or flu.
- Cover your cough and sneeze so your family does not catch your cold or flu
- Avoid smoky fires so you do not get sick so often.
    - Smoke that hurts your eyes is a poison that hurts your lungs even worse!
- If you are sick, stay home so others do not catch your disease.

Assessment: Household survey and parental signature

Objective: Students bring a brief assessment home to spark a discussion of respiratory diseases prevention and treatment with their parents and family

What you need: Short assessments for each child to bring home

Activity

- Students bring an assessment home on topics related to respiratory diseases
- Parents sign off on assessment and the child returns the assessment

Ages: Literate students (or parents)

Time: 5 minutes in class to distribute and 5 minutes to collect (or 20 minutes, with discussion).

- Assessment
- Talked to younger siblings
- If they did a poster: discussed with family
- Etc.

Discussion

- Ask How did you parents treat the assessment?
    - What did you have a chance to explain from what you have learned?
- How did it go teaching younger family members?

Practice explaining about avoiding colds and flu

Objective: Have students practice explaining to a younger sibling why it is important to wash hands with soap and to cover a cough and sneeze.

Time: 10 minutes

Ages: 7 and up

Activity

Have students practice explaining to a younger sibling why it is important to wash hands with soap and to cover a cough and sneeze.

Have students give feedback to each other to make sure the basic lessons are covered:

- Cold and flu germs spread through sneezes and coughs.
- To stay healthy it is important to wash hands with soap and to cover a cough and sneeze
- If *you* wash hands with soap and to cover a cough and sneeze then *I* am safer (and if I remember these behaviors, *you* are safer). Let's remind each other!

Assessment: Household assessment to engage families

Each student receives a form similar to:

Dear parent:

We would like your child to circle a reply to each question. Please put your name or mark to show your child has talked about these answers with you.

Student's name _____

1) Your child sneezes and coughs into his or her elbow.
Always Usually Sometimes Rarely Never

2) Has your child explained to his or her younger siblings why it is important sneeze and cough into his or her elbow?
Yes No There are no younger family members

3) Does your child stay away from smoke from a cookfire?
Always Usually Sometimes Rarely Never

4) Has your child explained to his or her younger siblings why it is important to stay away from smoke from a fire?
Yes No There are no younger family members

≪Note: If the student did a poster, add:≫

5) Your child shared the poster with the family and discussed its message.
Yes No

Parent's signature or mark _____

Reminder: Reinforce the habit of covering your cough and sneeze

See "Reinforce habits…" in handwashing section.

Apply the principles of creating small new habits to covering your cough and sneeze. That is, each time you cough or sneeze into your elbow, rewards yourself with a moment of celebration.

- Say a quick phrase ("Great job!") or sing a little song
- Do a gesture of congratulations (fist pump, arms in air) or a little victory dance
- Imagine praise or the roar of the crowd excited by your victory!

Quiz

Question	Answer
If you have a runny nose but not a fever, do you have a cold or a flu?	Cold
What are two diseases that can spread when someone sneezes on your food?	Two of: Cold, flu or measles
What are two ways to slow the spread of cold and flu?	Wash hands Cover your cough and sneeze
What makes it more likely a cold or flu turns into pneumonia?	Being around smoke from a cookfire or tobacco (Also: Having HIV, being malnourished, xx)

Resources on Colds & flu

Online resources

CDC website: Are You a Flu Fighter?

http://www.flufacts.com/pdf/FluFighter_Coloring_Book.pdf †

Videos (free and online)

*** Crawford's Corner- Crawford Is A "Sneezer Pleaser"

Ages 5-9 5:00
https://www.youtube.com/watch?v=-k5PJIystH4
Animated cat teaches how to stop spreading germs

Meena: pneumonia

http://www.youtube.com/watch?v=GIsRVfbO2Is

Computer games (free and online)

Meet the Microbes - How Lou Got the Flu

Comic books (free and online)

Pandemic flu Preparedness comic book

in multiple languages
http://www.kingcounty.gov/healthservices/health/preparedness/pandemicflu/comicbook.aspx
http://www.kingcounty.gov/healthservices/health/preparedness/pandemicflu/~/media/health/publichealth/documents/pandemicflu/EnglishComicbook.ashx

Appendix: Needs Assessment - not in curriculum

Incidence of respiratory illnesses

- In most nations respiratory illnesses such as pneumonia and bronchitis are the leading cause of child death, ahead of malaria and diarrheal diseases. How do they rank around here?
    - Childhood pneumonia rates are at http://www.who.int/bulletin/volumes/86/5/07-048769/en/ In most poor countries about 1/3 to ½ of children under five get pneumonia each year.
    - For example, overall death rates from pneumonia (all ages combined) are at http://www.worldlifeexpectancy.com/cause-of-death/influenza-pneumonia/by-country/

Perceptions and beliefs

- What do students believe causes colds and flu?
    - Adults?
- How disgusting is it to eat someone else's snot?
- Do people think of colds and flu as serious or just annoyances?

Prevention at home and school

- How often do students cough and sneeze into an elbow?
    - How often do adults?
- How often do students wash hands before eating?
- How often do students share a lot of food and utensils?
- How much are families using smoky wood or charcoal fires for cooking?

Diagnosis

- How well do students distinguish the common cold from a true flu?
- How well do students distinguish flu from malaria?
    - Adults?
- Do students know what "pneumonia" is?
    - Do adults?

Treatment

- When people have a serious flu, how often do they go to a doctor or clinic?
- What is the common treatment for a flu (that is, not pneumonia and not malaria, but high fever and feel terrible)? Is it an injection? A drip? Antimalarial pills? Antibiotics?
    - Note: All of those treatments are inappropriate, waste money, and sometimes can be dangerous.

Prevention in the Community

- How often do adults wash hands before preparing food?
- How often do adults cough and sneeze into an elbow?

- What is the main cooking fuel?
    - If it is wood or charcoal: Is cooking usually done in an enclosed, semi-enclosed, or outdoor setting?

At home and at school:

- How, where and when does defecation takes place? Should it take place?
- What are the barriers and benefits of sneezing into an elbow at home? At school?
- Who has influence on the students regarding sneezing into an elbow? Making ORS?