Unit 1: Introduction to Infectious Diseases

Instructional Activities for Ages 9-12

PKIDs’ Infectious Disease Workshop

Made possible by grants from the Northwest Health Foundation, the Children’s Vaccine Program at PATH and PKIDs.
PKIDs’ Infectious Disease Workshop
Acknowledgements

Producing this workshop has been a dream of ours since PKIDs’ inception in 1996. It has been more than two years since we began work on this project, and many people helped us reach our goal. It’s not done, because it is by nature a living document that will evolve as science makes strides in the research of infectious diseases, but it’s a great beginning.

There are people who’ve helped us whose names are not on this printed list. That omission is not deliberate, but rather from our own clumsiness in losing important pieces of paper, and we apologize.

Without the funding and support of the Northwest Health Foundation and the Children’s Vaccine Program at PATH (Program for Appropriate Technology in Health), this would have been an impossible task. Dr. Katherine Vaughn, PKIDs’ Medical Director and Dr. Karen Steingart, scientific advisor to PKIDs, provided excellent guidance through their editorial oversight and knowledgeable contributions to the Infectious Disease Workshop.

On PKIDs’ staff are three individuals without whom this publication would never have been finished—Franji Mayes, Mylei Basich and Christine Kukka, all of whom gave their very best to ensure this workshop is accurate and user-friendly.

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(Cover photo: Dennis Kunkel Microscopy, Inc./www.denniskunkel.com.)

Additional funding for this project provided by PKIDs (Parents of Kids with Infectious Diseases).

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The authors specifically disclaim any responsibility for any liability, loss, or risk, personal or otherwise, which is incurred as a consequence, directly or indirectly, of the use and application of any of the contents of this workshop.
Introduction

PKIDs (Parents of Kids with Infectious Diseases) is a national nonprofit agency whose mission is to educate the public about infectious diseases, the methods of prevention and transmission, and the latest advances in medicine; to eliminate the social stigma borne by the infected; and to assist the families of the children living with hepatitis, HIV/AIDS, or other chronic, viral infectious diseases with emotional, financial and informational support.

Remaining true to our mission, we have designed the Infectious Disease Workshop (IDW), an educational tool for people of all ages and with all levels of understanding about infectious diseases. In this workshop, you will learn about bacteria and viruses, how to prevent infections, and how to eliminate the social stigma that too often accompanies diseases such as HIV or hepatitis C.

We hope that both instructors and participants come away from this workshop feeling comfortable with their new level of education on infectious diseases.

The IDW is designed to “train-the-trainer,” providing instructors not only with background materials but also with age-appropriate activities for the participants. Instructors do not need to be professional educators to use these materials. They were designed with both educators and laypersons in mind.

The IDW is comprised of a master Instructor’s Background Text, which is divided into six units: Introduction to Infectious Diseases, Disease Prevention, Sports and Infectious Disease, Stigma and Infectious Disease, Civil Rights and Infectious Disease, and Bioterrorism and Infectious Disease.

For each unit, instructors will find fun and helpful activities for participants in five age groups: 2 to 6 years of age, 6 to 9 years of age, 9 to 12 years of age, 13 to 18 years of age and adults.

We welcome any questions, comments, or feedback you may have about the IDW or any other issue relating to infectious diseases in children.

PKIDs
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FAX: (360) 695-6941
EMAIL: pkids@pkids.org
WEBSITE: www.pkids.org
Dear Parents,

Our class will soon be studying infectious diseases. We will learn about what germs are and ways we can keep from spreading germs. We will also learn that people who have infectious diseases don’t have to be treated differently or singled out just because they have a disease.

The workshop we will use has been created by PKIDs (Parents of Kids with Infectious Diseases), a national nonprofit organization dedicated to supporting families touched by infectious diseases.

Your child may have questions about germs or may come home with new ideas about preventing the spread of germs. Here are a few ways you can stay informed:

View PKIDs’ website. PKIDs’ website can be found at www.pkids.org. You may also request information by calling PKIDs at 1-877-55-PKIDS.

View the instructor’s background text for the Infectious Disease Workshop (IDW). The primary purpose of this text is to provide teachers with background information on infectious diseases. It is a good text for anyone seeking general information on infectious diseases. The text provides information about specific diseases, methods of disease prevention, and civil rights for those affected by infectious disease. Visit www.pkids.org for a link to the IDW background texts in PDF format.

View descriptions of the activities we will be doing in class. Visit www.pkids.org for a link to the activities and handouts in PDF format.

The world becomes smaller every day and germs from near and far continue to threaten our health. It is extremely important to educate our young people, equipping them with prevention methods to protect their health and stop the spread of disease.

As always, please feel free to contact me with any questions!

Sincerely,
MICROBES
Talking Big About Small Things

LEVEL
Ages 9-12

OBJECTIVE
Students will understand how small microbes are compared to items seen by the naked eye.

MATERIALS
- Large sidewalk area (10 meters long) that can be written on, or long sheet of butcher paper.
- Chalk (for sidewalk) or markers (for butcher paper).
- Meterstick.
- Handout on size ratios (included) — 1 for every group.

PREP
Secure the area to be used for the project.

INSTRUCTIONAL COMPONENTS/ASSESSMENT
1. Explain to students that the following project will demonstrate just how small microbes like viruses and bacteria really are by examining their sizes relative to the width of a human hair. “If a human hair were this big (10 meters wide), this is how big these microbes would be.”
2. Be sure students understand that these are only a few of many types of disease-causing (pathogenic) microbes.
3. Divide students into groups (1 group for each object to be measured off, including the hair).
4. On the area to be marked off (sidewalk or butcher paper), have the groups mark off and label their object, starting with the human hair.
5. After labeling the hair (10m), be sure to discuss with students how much larger this is than in reality. Have them look at a hair of their own, and then try to imagine that hair 10 meters wide (not long). Explain that the rest of the activity will be enlarging the various microbes to that extent as well.
6. The column, “ACTUAL SIZE,” is the actual size of the named microbe as measured in mm (millimeters; 1mm = 0.001 meter), μm (micrometers; 1μm = 0.000 001 meter), or nm (nanometers; 1nm = 0.000 000 001 meter). These measurements are included for reference; students should focus on measurements in the “MODEL SIZE” column.
7. Measurements shown in parentheses are the measurements of actual and model size in meters. These measurements are included as a “common denominator” to show how actual measurements were converted to model measurements.
8. It may help to discuss each microbe’s relative size as it is marked off. “If a human hair were this wide, then a red blood cell would be this big. Imagine how small it is in real life—it would take 10 blood cells in a row to be as wide as this strand of hair!”

Image credits following two pages:
SPL/Photo Researchers Inc. (2, 4, 5, 8, 11)
Dennis Kunkel Microscopy Inc./denniskunkel.com (1, 3, 6, 7, 9, 10, 12)
### MICROBES: Talking Big About Small Things

<table>
<thead>
<tr>
<th>Photo</th>
<th>Name/Description</th>
<th>Actual Size</th>
<th>Model Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Human hair</td>
<td>0.1mm wide</td>
<td>10m</td>
</tr>
<tr>
<td>1</td>
<td>Red blood cell</td>
<td>10µm (.000 010m)</td>
<td>1m</td>
</tr>
<tr>
<td>2</td>
<td><em>Bacillus anthracis</em>, bacteria that produces spores causing anthrax, a disease of the lungs or skin</td>
<td>5—10µm long (.000 005m) 1—3µm wide</td>
<td>50cm—1m (.5—1.0m)</td>
</tr>
<tr>
<td>3</td>
<td><em>Corynebacterium diphtheriae</em>, bacteria producing toxin, causing diphtheria, attacking respiratory system</td>
<td>1.0—8.0µm long (.000 001m) 0.3—0.8µm wide</td>
<td>10—80cm (.1m—.8m)</td>
</tr>
<tr>
<td>4</td>
<td><em>Mycobacterium tuberculosis</em>, bacteria causing tuberculosis, a disease of the lungs</td>
<td>0.5—4.0µm long (.000 000 5m) 0.3—0.6µm wide</td>
<td>5—40cm (.05—.4m)</td>
</tr>
<tr>
<td>5</td>
<td><em>Escherichia coli O157:H7</em>, bacteria that cause diarrhea</td>
<td>1.0—3.0µm long (.000 001m) 0.1µm wide</td>
<td>10—30cm (.1—.3m)</td>
</tr>
<tr>
<td>6</td>
<td><em>Haemophilus influenzae</em> type b, bacteria causes inflammation of the membranes of the spinal cord and brain</td>
<td>0.5—2.0µm long (.000 000 5m) 0.2—0.3µm wide</td>
<td>5—20cm (.05—.2m)</td>
</tr>
</tbody>
</table>
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<td></td>
<td>Human hair</td>
<td>0.1mm wide</td>
<td>10m</td>
</tr>
<tr>
<td><img src="image1.jpg" alt="Image" /></td>
<td><em>Streptococcus pneumoniae</em>, bacteria causing pneumonia, an inflammation of the lungs</td>
<td>0.5—1.25μm sphere (.000 000 5m)</td>
<td>5—12.5cm (.05—.125m)</td>
</tr>
<tr>
<td><img src="image2.jpg" alt="Image" /></td>
<td><em>Bordetella pertussis</em>, bacteria causing whooping cough</td>
<td>1.0μm long (.000 001m) 0.2—0.3μm wide</td>
<td>10cm (.1m)</td>
</tr>
<tr>
<td><img src="image3.jpg" alt="Image" /></td>
<td><em>Neisseria meningitidis</em>, bacteria causing inflammation of the membranes of the spinal cord and brain</td>
<td>0.6—1μm sphere (.000 000 6m)</td>
<td>6—10cm (.06—1.1m)</td>
</tr>
<tr>
<td><img src="image4.jpg" alt="Image" /></td>
<td><em>Staphylococcus aureus</em>, bacteria producing toxins causing food poisoning</td>
<td>0.5μm (.000 000 5m)</td>
<td>5cm (.05m)</td>
</tr>
<tr>
<td><img src="image5.jpg" alt="Image" /></td>
<td>Average virus, viruses are usually &lt; 1μ (&lt; 1,000nm)</td>
<td>100nm (.1μm) (.000 000 100m)</td>
<td>10mm (0.01m)</td>
</tr>
<tr>
<td><img src="image6.jpg" alt="Image" /></td>
<td>Poliovirus, causes polio, a potentially paralyzing disease</td>
<td>20nm (.02μm)</td>
<td>2mm (0.002m)</td>
</tr>
</tbody>
</table>
HOW DO GERMS SPREAD?

LEVEL
Ages 9-12

OBJECTIVE
Students will demonstrate ways in which germs spread.

MATERIALS
- 1 copy of the handout with demonstrations, cut apart.
- Additional materials are listed on the handout.

PREP
If desired, pre-assign students to groups.

INSTRUCTIONAL COMPONENTS
1. Arrange students into 7 groups.
2. Tell students they will be studying and demonstrating different ways in which germs can be spread. Ask students to share what they already know about germs that cause diseases and how those germs can be spread.
3. Give each group one of the demonstrations from the handout. Have one person in the group read the demonstration to the rest of the group.
4. Have the groups devise a plan for performing the demonstration—who will do what, when they will do it, and how they will describe to their audience what is happening. (One group member can be a narrator.) Be sure each group has determined who will bring any needed materials.
5. Be sure each group understands that their demonstration should be appropriate. When talking about germs and how they can make us sick, it can be easy for students to get carried away acting out certain aspects of the demonstration.
6. Set a date for the demonstrations to be given.

ASSESSMENT
- Students must accurately demonstrate ways germs can spread. Each group member plays an active role in the demonstration.
- Ask students to recall and describe three ways in which germs can be spread.
- Students can also perform demonstrations for other classes.
HOW DO GERMS SPREAD?
Student Demonstrations

DEMONSTRATION 1

Germs can spread through the air. Very small pieces of germs can travel far in the air, just like dust. People can breathe in these germs and get sick.

For this demonstration, you will need something to represent small pieces of germs, like cornstarch. One person will send the “germs” into the air. One way this can be done is by putting cornstarch on your hand and blowing on it. Then other group members can hold up dolls or action figures, pretending they are breathing in the airborne “germs.” (Don’t make people breathe it in.) Be sure to describe to your audience what is happening.

DEMONSTRATION 2

Germs can spread through droplets. Droplets can come from the sneezes and coughs of a sick person. Droplets can’t travel far in the air, but they can travel a short distance. They can make other people sick by landing inside noses, on eyes, in mouths, or on objects that other people touch. Then these people touch their mouths, eyes or noses and the germs get into their bodies.

For this demonstration, you will need something to represent germy droplets, like mist from a clean spray bottle filled with water. One person will pretend to “sneeze” or “cough” on other group members by spraying water at them. The other group members will need to show how the droplets can get into noses, eyes or mouths. Be sure to describe to your audience what is happening.

DEMONSTRATION 3

Germs can spread from people’s hands to food. This usually happens when people don’t wash their hands after using the restroom. The germs go from the dirty hands to food, and other people can get sick when they eat that germy food.

For this demonstration, you will need something to represent germs. One way to do this is to spread a little bit of petroleum jelly on your hands. Then put glitter on your hands. The glitter sticks, just like germs, but it can also be spread around the room, just like germs. Someone will need to show that they have “germy” hands. That person will pretend to make food that is not cooked (like a salad). Germs then transfer from his/her hands to the food. Other group members will need to show that eating the “germy” food makes them sick. Be sure to describe to your audience what is happening. (Try not to eat the glitter.)
DEMONSTRATION 4

Germs can spread from a baby to a caretaker to other babies or children. This happens when people change a baby’s diapers and then touch other children or babies with their dirty hands. Then the other children or babies get the germs from the first baby.

For this demonstration, you will need something to represent germs. One way to do this is to spread a little bit of petroleum jelly on your hands. Then put glitter on your hands. The glitter sticks, just like germs, but it can also be spread around the room, just like germs. You will also need a doll and a diaper. One person will pretend they are changing a “germy” diaper and gets “germs” on his/her hands. Other group members can have dolls representing babies. The person with “germy” hands holds the babies and gets “germs” on them. Be sure to describe to your audience what is happening. Show how the “germs” have spread to the other babies.

DEMONSTRATION 5

Germs can spread from food to hands to food. Some food that is not yet cooked, like raw chicken or eggs, has germs in it. Cooking the raw food kills these germs. But if a person touches the raw food and then touches other food that will not be cooked, like salad, the germs stay on the uncooked food. Anybody eating that food can then get sick.

For this demonstration, you will need something to represent germs. Glitter and nutmeg work well because they stick to hands, just like germs. You will also need something to represent germy raw food, like a plastic chicken or plastic eggs. One person will handle the “raw” food, getting “germs” on his/her hands. He/she will then prepare other uncooked food, like salad or vegetable snacks, and get “germs” on it. Other group members will pretend to eat the “germy” food and get sick from the “germs”. Be sure to describe to your audience what is happening.

DEMONSTRATION 6

Germs can spread from the nose, mouth, or eyes to other people. Sneezing, coughing, or rubbing your eyes or nose can get germs on your hands. You can then spread those germs to other people by touching them.

For this demonstration, you will need something to represent germs. One way to do this is to spread a little bit of petroleum jelly on your hands. Then put glitter on your hands. One group member will pretend to rub his/her eyes and nose. Another group member will sneeze or cough on his/her hand. You will need to show that “germs” are now on their hands. (Make sure you do not get your glittery hands on your eyes or too close to your nose or mouth.) They will then touch the other group members (for example, by shaking hands) and get “germs” on them. Show that the “germs” are now on the other people. Be sure to describe to your audience what is happening.
DEMONSTRATION 7

Germs can spread from food to hands to babies. Some food that is not yet cooked, like raw chicken or eggs, has germs on it. Cooking the food kills these germs. But if a person touches the raw food and then touches a baby, the baby can get sick from the raw food germs.

For this demonstration, you will need something to represent germs. One way to do this is to spread a little bit of petroleum jelly on your hands. Then put glitter on your hands. The glitter sticks, just like germs, but it can also be spread around the room, just like germs. You will need a doll to represent a baby. You will also need fake food to represent raw meat or eggs. Group members will pretend to prepare the raw, “germy” food. They will then hold the baby and show how the “germs” are now on the baby. Be sure to describe to your audience what is happening.
CARD GAME
Microbes vs. You

LEVEL
Ages 9-12

OBJECTIVE
On a basic level, students will recognize diseases, their modes of transmission, and how transmission can be prevented.

MATERIALS
- Card set (masters included with this lesson)—2 printouts of each page, except the Microbe pages (yellow background), which only need one printout each.
- 1 timer.

PREP
Print on sheets on heavy paper and cut apart. Laminate if desired.

INSTRUCTIONAL COMPONENTS
Explain to students that the purpose of the game is to learn about different diseases and how they can be transmitted and prevented. The player with the most points after 15 minutes wins the game. Points are earned by playing Health or Vaccination Cards from your hand. Prevent other players from earning health points by playing Microbe and Attack Cards. Defend yourself from other players’ Microbe and Attack Cards by playing Infection Protection cards.

Types of cards:

Microbe Cards. The microbes/diseases featured on these cards are diseases that are common in the U.S. and/or are vaccine-preventable. Each Microbe Card shows:
1. A microscopic photo of the microbe.
2. Microbe name and description of its effects.
3. Methods of “attack.” (The symbol in this area indicates which Attack Card must accompany the Microbe Card in order to attack.)
4. Description of the consequences if a player is unable to defend him/herself with a corresponding Infection Protection Card. The teacher should help students understand that many of these diseases can become life-threatening and will cause more than just a lost turn in the game.
5. “Weaknesses” of the Microbe. (The symbol in this area indicates which Infection Protection Cards defend a player against the Microbe.)

Attack Cards. Each type of Attack Card provides a general description of how that type of attack occurs. Attack descriptions are based on types of transmission. The Attack Cards and attacks and weaknesses listed on the Microbe Cards are meant to indicate common ways rather than the only ways in which microbes/diseases are transmitted and prevented.
Infection Protection Cards. These cards defend a player against a Microbe attack. Attack Cards correspond with Infection Protection Cards as follows:
2. Handwashing—prevents Dirty Hands attack.
3. Tissue—prevents Droplet attack.
4. Vaccination—prevents many attacks. Students and teachers should understand that the first 3 Infection Protection methods are important in preventing disease transmission, but vaccination is a safe and far more reliable method of defending one’s self against disease.

Health Cards. Generally speaking, more points are given for actions that are harder to do or are less common. The actions portrayed on the Health Cards are intended to promote healthy habits and are not intended to indicate which habits will necessarily prevent the contraction of certain diseases. For example, a student reading the Health Card that says, “You say ‘No thanks’ to sharing a can of pop with friends” should not assume that HIV is contracted by sharing a can of pop with someone!

Rules:
1. This game may be played by 3-6 players.
2. Players can be attacked and prevented from earning Health Points if the player before plays a Microbe Card with the corresponding Attack Card. An appropriate Attack Card must accompany every Microbe attack.
3. Players can defend an attack by playing the corresponding Infection Protection Card.
4. Players who cannot defend an attack lose a turn (or turns). Players may not earn any Health Points on a lost turn!

Directions for play:
1. Set a timer for 15 minutes. At the end of 15 minutes, the player with the most Health Points wins.
2. Shuffle the deck, and deal 7 cards to each player. Players must always have 7 cards in their hand at the beginning of each turn.
3. Begin play; choose someone to go first. Play will continue to the left.
4. A turn consists of:
   • Drawing a card or cards. (Players must always have 7 cards at the beginning of each turn. For example, if a player has 5 cards, he should draw 2 more.)
   • Playing a card or cards:
     • Play an Infection Protection Card if someone has “attacked” you and you have a card to defend yourself with.
     • Play a Health or Vaccination Card and earn points.
     • Prevent another player from earning points by playing both a Microbe Card and the corresponding Attack Card.
5. Continue play until the timer sounds after 15 minutes.
ASSESSMENT

Questions:
1. Which diseases can attack by blood or body fluids? (hepatitis B, HIV)
2. How can we protect ourselves from bloodborne microbes like these? (with barriers)
3. What are some examples of barriers? (bandages, non-permeable gloves, plastic baggies)
4. What kind of attack can handwashing prevent? (dirty hand attack)
5. Can handwashing help prevent other kinds of attacks, too? (yes—droplet attacks)
6. Which is a more reliable method of preventing disease: using tissues, or vaccination? (vaccination)
7. Is it still a good idea to use tissues (or our elbow) when we sneeze/cough? Why/why not? (yes; because some diseases transmitted this way, like the common cold, are not vaccine-preventable; also, some people, like people with AIDS, are more susceptible to disease)
8. Can we get HIV/AIDS from sharing a pop with somebody? (no)
9. Can we get other diseases by sharing a pop with somebody? (yes)

"Microbe Cards" Microscopic photo credits:
SPL/Photo Researchers Inc.
Chickenpox (varicella), Pertussis (whooping cough), Rubella (german measles), Measles, Mumps, Hepatitis A, Hepatitis B, Rotavirus, HIV, E. coli, Tuberculosis (TB).
Dennis Kunkel Microscopy Inc./www.denniskunkel.com
Influenza (flu), H. Influenzae type B (Hib), Diphtheria, N. meningitidis, Poliovirus, Staph, Strep,
The most common droplet attacks are sneezes and coughs. A droplet attack could also occur if someone sneezed/coughed on their hand and touched something. Other people could touch these germy droplets and then rub their eyes or lick their fingers.
Fortunately, not many microbes launch airborne attacks. Of the microbes that do, they are very small and light, so they can travel distances. Because of this, they are easily inhaled.
Dirty hands are usually hands that have not been washed after going to the bathroom! Microbes then go from the dirty hands to food or mouths or other people.
For a bloodborne attack to occur, blood with microbes must get into your body. For microbes like HIV, this is difficult, because HIV can't live outside the body for long. On the other hand, hepatitis B microbes are tougher and can live in dried blood or even saliva!
You wash your hands after handling raw food.

You wash your hands after using the restroom.

You wash your hands after using a bleach solution to clean kitchen countertops.

You teach your little brother or sister all about hand washing.

You help your grandma bake cookies, and you wait until the very end to lick your fingers.

Earn 10 Health Points. Earn 20 Health Points. Earn 10 Health Points.

Earn 20 Health Points. Earn 30 Health Points.
You say “No thanks” to sharing toothbrushes and other personal items with friends.

You say “No thanks” to sharing a can of pop with friends.

Someone is bleeding! Instead of touching blood, you ask an adult for help.

You just used the restroom. You are in a hurry, but you still stop to wash your hands.

You wash your hands after visiting the petting zoo.

You sneezed and covered your mouth with a tissue or your elbow.
You say “No thanks” to sharing half-eaten food with friends.

You check to make sure the burger you’re eating is fully cooked.

You help change your little sister’s diaper, and you remember to wash your hands afterwards.

You scraped your arm yesterday while riding your bike. You keep the scrape covered with a bandage while it heals.

You ask if it’s OK for bleach to be added to the laundry wash cycle.

At practice, you avoid sharing water bottles and towels with your teammates.
Vaccination is a top-notch way to guard against many infectious microbes.
Using a *tissue* when you cough or sneeze can help contain those droplet attacks. It is not the best or most reliable defense, though, since droplets can spread to your hands and then to other things or people.
Handwashing is one of the most important things you can do to defend yourself against a dirty hand attack. Hands carry all kinds of microbes, so wash often to get rid of them!
When it comes to bodies, it’s important to keep your blood in and other people’s blood out by using barriers. Common barriers include bandages, rubber gloves and plastic bags.
**PKIDs’ IDW — Instructional Activities for Ages 9-12**

**Unit 1: Introduction to Infectious Diseases**

**Chickenpox**
This virus will cause aches and fever as well as a very itchy rash.

**Attacks:** 🦠
A successful attack will cause the victim to lose a turn for recovery.

**Weaknesses:** 🎨

**INFLUENZA — "THE FLU"**
The many varieties of this virus cause cold symptoms plus aches and fever.

**Attacks:** 🦠
A successful attack will cause the victim to lose a turn for recovery.

**Weaknesses:** 🎨 🎨

**Pertussis — "Whooping Cough"**
This bacterium will give you a nasty cough that makes breathing difficult.

**Attacks:** 🦠
A successful attack will cause the victim to lose a turn for recovery/hospitalization.

**Weaknesses:** 🎨 🎨

**Rubella**
This virus can cause rash, inflammation, swelling, and even birth defects.

**Attacks:** 🦠
A successful attack will cause the victim to lose a turn for recovery.

**Weaknesses:** 🎨 🎨

**H. influenzae type b—"Hib"**
This bacterium causes inflammation of the spinal cord or brain (meningitis).

**Attacks:** 🦠
A successful attack will cause the victim to lose a turn for hospitalization.

**Weaknesses:** 🎨 🎨

**Diphtheria**
This bacterium produces a poison that attacks the upper respiratory system.

**Attacks:** 🦠
A successful attack will cause the victim to lose a turn for recovery/hospitalization.

**Weaknesses:** 🎨 🎨
**Unit 1: Introduction to Infectious Diseases**

**Measles**
This virus makes you feel like you've got

**Attacks:** 🍀
A successful attack will cause the victim to lose a turn for recovery/hospitalization.

**Weaknesses:** 🍀

**Mumps**
This virus causes swelling of the neck and jaw areas as well as fever and sore throat.

**Attacks:** 🍀
A successful attack will cause the victim to lose a turn for recovery/hospitalization.

**Weaknesses:** 🍀 🍀

**N. meningitidis**
This bacterium causes inflammation of the spinal cord or brain (meningitis).

**Attacks:** 🍀
A successful attack will cause the victim to lose a turn for hospitalization/treatments.

**Weaknesses:** 🍀 🍀

**Poliovirus**
This virus causes muscle pain, stiffness, spasms, and even paralysis.

**Attacks:** 👨‍💼
A successful attack will cause the victim to lose a turn for recovery/hospitalization.

**Weaknesses:** 🍀 🍀

**Hepatitis A**
This virus affects the liver and makes you feel like you have the flu.

**Attacks:** 👨‍💼
A successful attack will cause the victim to lose a turn for recovery/hospitalization.

**Weaknesses:** 🍀 🍀

**Hepatitis B**
This virus affects the liver. If it becomes chronic, it can cause liver damage.

**Attacks:** 🍀 ➡️ 🍀
Flip a coin to see if chronic infection occurs. If so, lose 2 turns.

**Weaknesses:** 🍀 🍀
Unit 1: Introduction to Infectious Diseases

**Rotavirus**
This virus will make you very sick to your stomach for 3 to 8 days.

**Attacks:** 🧼
A successful attack will cause the victim to lose a turn for recovery/hospitalization.

**Weaknesses:** 🐙 🍓

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**HIV**
This virus slowly causes AIDS, preventing the body from fighting disease.

**Attacks:** 🦠 🦠
Chronic infection causes the victim to lose 2 turns.

**Weaknesses:** 💊

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**Staph**
Certain staph bacteria cause food poisoning — you won’t feel like eating!

**Attacks:** 🧼
A successful attack will cause the victim to lose a turn for recovery/hospitalization.

**Weaknesses:** 🍽️

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**E. coli**
Certain E. coli cause food poisoning. You’ll want all your meat well cooked after this!

**Attacks:** 🧼
A successful attack will cause the victim to lose a turn for recovery/hospitalization.

**Weaknesses:** 🍽️

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**Strep**
Certain types of strep bacteria cause pneumonia.

**Attacks:** 🦠
A successful attack will cause the victim to lose a turn for recovery/hospitalization.

**Weaknesses:** 🍽️ 🤢

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**Tuberculosis - "TB"**
This bacterium can cause painful, bloody coughs in those with active TB disease.

**Attacks:** 🎈
Pick a number between 1 and 10,000. If somebody guesses it, you get active TB.

**Weaknesses:** 🛑 📊
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