

MALARIA

Contents

Malaria	1
Background	2
Objective for Unit 6: Malaria.....	2
Preparation: Assessment	3
Incidence of mosquito-borne illnesses.....	3
Mosquito abatement.....	3
Perceptions and beliefs	3
Prevention at home: Bednets	4
Diagnosis.....	4
Treatment	4
Prevention in the Community	5
Preparation	5
Malaria moves from blood to mosquito to blood.....	5
Simulation: Mosquitoes spreading malaria.....	7
Appendix: Cards for Mosquito Simulation.....	9
Outdoor game: Mosquito tag	10
Round 3	11
Round 3	11
Story: My Castle	12
Classroom game: Beat the Mosquito	13
Experiment: Covered water jars & bugs.....	15
Experiment: Bug bites with and without bednets	15
Experiment: What kills mosquitoes?	16
Class participation story: Bednets.....	17
Appendix: Cue cards.....	18
Classroom game: Stop the Mosquito	19
Simulation: Why take the Right Medicine?.....	21
Simulation: Finishing doses to stop super-bugs	23
Classroom game: I See.....	24
Card game: Bednets vs. Bad Bugs.....	25
Classroom game: BINGO	26

Outdoor game: The “How do germs move” Relay Race.....	30
Card game: Fishing for Health.....	32
Card game: Memory	34
Card game: Health Lotto.....	35
Add Malaria content to multi-topic activities	36
Arts: Skits, Poster, & Song on malaria topics.....	36
Reminder: Expand prior Class agreement	36
Reminder: Reinforce the habit of Bednet use	37
Practice explaining about bednets.....	37
Existing Health Club adds malaria topics.....	37
Classroom game: Alternate reality version 1 and 2 xx	38
Assessment: Household survey to engage family on malaria topics	38
Quiz.....	40
Quiz Game: Jump to Identify What Makes a Mosquito Happy or Sad	41
Resources on Malaria.....	42
Videos (free and online).....	42
Computer games (free and online).....	42
Comic books (free and online).....	42
Curriculum (free and online)	42
NGOs	42

Background

In 2012, there were about 200 million malaria cases and an estimated 600,000 malaria deaths.¹ Insecticide-treated nets can be highly effective. In regions with a lot of malaria, protecting 1000 children with nets can save about 5 lives a year.²

Objective for Unit 6: Malaria

- **Learning:** Students know that sleeping without an insecticide-treated bednet and having uncovered water jars and puddles helps spread malaria to themselves and their neighbors.
- **Behavior:** Students sleep under an insecticide-treated bednet and reduce mosquito breeding grounds. Students encourage others in these safe behaviors.

¹ WHO “10 Facts on Malaria,” March 2014, <http://www.who.int/features/factfiles/malaria/en/>

² Lengeler, Christian. "Insecticide-treated bed nets and curtains for preventing malaria." *Cochrane Database Syst Rev* 2.2 (2004).

Preparation: Assessment

Consider these questions to assess your area's risk of malaria. Perhaps talk to a local doctor or nurse to understand how common malaria is.

<<Ideally much of this assessment will be done at the regional level and shared with individual teachers.>>

Incidence of mosquito-borne illnesses

- How many students have ever had malaria? Parents?
- How common is malaria in the rainy season?
 - In the rest of the year?
- How many bug bites per night can a kid expect without a bednet? With a net?
 - In the rainy season
 - The rest of the year
- Overall malaria death rates by nation are at <http://www.worldlifeexpectancy.com/cause-of-death/malaria/by-country/>

How prevalent are diseases spread by daytime mosquitoes?

- [Chikungunya](#)
- Dengue fever
- Yellow fever
- In the Pacific: [filariasis](#) that causes [elephantiasis](#)?³
- Other diseases spread by mosquitoes active in the daytime?

These diseases are spread by mosquitoes (*Aedes*) that are most active the few hours after sunrise and before sunset. If any of these diseases are common around here, emphasize that both evening mosquitoes that carry malaria and daytime mosquitoes that carry these diseases are very dangerous.

Mosquito abatement

- If you look at uncovered jugs of water, are there usually bugs swimming in them?
- Ask a local mosquito control expert: Is it useful to cover jugs of water and drain puddles and canisters, or are there so many breeding grounds it won't help?

Perceptions and beliefs

- How do people around here think malaria spreads?
 - Adults
 - Students
 - Mosquito larva in water
 - mosquito eggs in fruit
 - contact with malaria patients
 - mosquito bites

³ Evening mosquitoes spread elephantiasis in Africa (*Anopheles*) and the Americas (*Culex*).

- How do people think of mosquito bites: annoyances or dangers?
- How do adults think of malaria in children: serious annoyance or danger?
 - How many people know someone who has died of malaria in the last 3 years?

Prevention at home: Bednets

- How many families own a bednet?
 - How many students?
 - Among those who have bed nets, how often do they tend to use them?
- Ask students: How many slept under a bednet last night?
 - Note for areas with nets that need re-treatment: At the start of each term remind students to have their parents re-treat their bednet.

Table: Supply and demand of different bednet types

	Are these nets available near here?	If so, where and for how much?	How often used?	Affordable to what share of parents?
bednets with no insecticide				
insecticide-treated bednets that need re-treatment				
long-lasting insecticide-treated bednets				

Diagnosis

- Do people distinguish malaria from other fevers?
 - Or do people consider all fevers as “malaria”?
- Do drug sellers or doctors use rapid malaria tests?
 - How easy are rapid malaria tests to find?
 - How much do rapid malaria tests cost?
 - How common are rapid malaria tests prior to dispensing anti-malarial drugs?

Treatment

- Where do people go for treatment for suspected malaria?
 - What symptoms cause people to seek treatment?
 - How often do adults and children get medical care for suspected malaria?
- Is artemisinin-based combination therapy (ACT) available near here?
 - If so, what is this combination drug called?
 - Where do you get them?
 - How much do they cost?
 - Where do you get it?
 - What % is fake?
- If you ever received treatment: Did you finish your dose the last time you were treated?

- What other treatments are used for malaria? (pepper, tree bark, etc.)
- How much fake anti-malaria drugs are there in private and public clinics?

Prevention in the Community

(Note: Students can assist in this portion of the assessment.)

- Are there many uncovered water jars in this community?
 - If so, what share of uncovered containers have bugs living in them?
- Are there many uncovered containers or puddle in this community where mosquito larvae grow?
- Is there any program of indoor spraying?
 - If so: How many students' homes have been sprayed in the last 2 years? Do they know why?
 - Were all rooms sprayed, or did families resist spraying some rooms?
- Is there a way to acquire mosquito fish or guppies?

<p><i>Reminder: You are the example</i></p>
--

<p>Make sure you always sleep under a bednet.</p>

Preparation

Is it possible to teach the malaria unit during the rainy season?

Change the word “antimalarial” below to the local name for the artemisin-based combination anti-malarial.

If rapid malaria tests are not available, change the instructions below appropriately.

Malaria moves from blood to mosquito to blood

Explain:

- *Some germs live in our blood, like malaria. These germs cannot move. How do they get from a sick person to infect a new person?*

Ask

- *What do you know that grabs blood from one person, then travels to another person?*
 - *Mosquitoes.*
- If they do not say it, give a hint such as “buzz....”
- Ask: *Why is this mosquito bright red?*



- Answer: It is full of somebody's *blood!*

- Background on malaria
 - See briefing at <http://www.cdc.gov/malaria/about/disease.html>
 - 200 million malaria cases / year
 - Malaria kills > 1 million per year.
 - When you have hundreds of millions (!) of parasites living in you, you are supporting tenants who do not pay rent.
 - It is harder to learn in school – or even stay awake!
 - Parents earn less.
 - Symptoms include
 - A high fever ($> 39^{\circ}\text{C}$).
 - Chills.
 - Headache.
 - Sweats.
 - Fatigue.
 - Nausea and vomiting.

Picture of local sick kids

Simulation: Mosquitoes spreading malaria

Objectives: Students learn how mosquitoes spread malaria and how bednets protect themselves and the community

Time: 30 minutes

What you need

- About half as many sets of cards as there are students. (For example, 10 students require 5 sets of cards.) Each set has one card that says, “Itchy”, one card that says “Malaria” and one card that says “Bednet.”
- See Appendix for sample cards.

Activity

4 children are mosquitoes, the rest are just people in the community. Everyone is told the two rules:

- For people: If you are bitten by a mosquito with malaria, you now have malaria. The mosquito will give you several Malaria cards.
- For mosquitoes: If you bit someone with malaria, you now carry malaria. The person you bit will give you several Malaria cards.
 - Explain: Mosquitoes *carry* malaria, but it does not hurt them – it only hurts you when they deliver it!

Round 1: The 4 mosquitoes walk around the group and each mosquito hands several people cards that say “Itchy.”

Round 1- discussion: After 30 seconds the mosquitoes should have given out their 3 cards. Pause, and ask those that received a card if having a mosquito bite is a problem. Students should mention itchiness, and that is all.

Round 2: Now one mosquito carries malaria, so it has a stack of “Malaria” cards. The mosquito with malaria hands 3 people a few Malaria cards. Then the other 3 mosquitoes walk around the group. Three of them hand 3 people cards that say “Itchy.” If one of those mosquito bites someone who has malaria cards, that mosquito takes several malaria cards. From then on, anyone that mosquito bites will receive a malaria card. (Get more malaria cards if needed.)

Round 2- discussion: After a minute or so, the mosquitoes should have given out their several cards. Pause, and ask those that received a card if having a mosquito bite is a problem.

- Most students should mention itchiness, and that is all.
- A few students should say they have been bitten by a mosquito carrying malaria and now have malaria.

Round 3: Give each student and mosquito with malaria a few more Malaria cards. Have the mosquitoes continue biting, so more mosquitoes carry malaria and more students have malaria.

Round 3- discussion: After a minute or so, the mosquitoes should have given out their several cards. Pause, and ask those that received a card if having a mosquito bite is a problem.

Most students should mention having malaria.

Ask the original mosquito with malaria how many cards he gave out. (It should be 3.) It should be less than the number of students with malaria.

Ask the students how that happened. They should explain that a peer with malaria spread it to more mosquitoes.

Round 4: Collect all the students' cards. Give half the students cards that say: "Insecticide-treated bednet". Start again Round 2 again, but with one change; Any mosquito that tries to bite someone with an insecticide treated net dies and cannot bite anyone else.

Round 4 Discussion

After a minute or so, the mosquitoes should have died. Pause, and ask how many mosquito bites there are and how many have malaria. A few students should have been bitten by a malarial mosquito, but it should not have spread like in rounds 2 and 3. Ask students why there is so little malaria. They should explain nets protect those sleeping under them. Ask them why even people *without* nets are protected. Prompt them to understand that you are safer each time your *neighbor* uses a net: (1) the net keeps that person safe (so they won't spread malaria to you) *and* (2) the net kills mosquitoes.

In fact, nets are not 100% safe because you are not always asleep! Thus, you need your neighbors' help to stay safe.

How else can you minimize the # of bites you get?

Prompt them to say: Long sleeves help.

Key words: Demonstration, Prevention, Malaria, Bednets

Outdoor game: Mosquito tag

Objectives: Students learn how mosquitoes spread malaria and how bednets protect themselves and the community

Time: 30 minutes

Number of players: 4-30

Ages: 7-14

Time required: 15 minutes

What you need

- Room to run
- Piece of cloth or paper that represents a bednet
- Marked area that represents health clinic

Activity

Round 1

- Choose a few players to be mosquitoes. They try to tag other players. Nothing happens when you are tagged; you keep running.
- Stop Round 1 after a minute or so.

Discussion

- Boring game. With no malaria, mosquito bites are not so bad.

Round 2

- Choose a few players to be mosquitoes.
- Choose one player to have malaria

Explain:

- Any player with malaria has to sit down.
- Mosquitoes try to tag other players, both those who are running and those with malaria (that is, those sitting down).
- After a mosquito tags any player with malaria, the mosquito carries malaria.
 - Note: Pretty soon all the mosquitoes should have carry malaria.
- After a mosquito carries malaria, when that mosquito tags someone the mosquito yells “MALARIA!” The tagged person now has malaria and has to sit down.
- A player can be bitten many times.
- Note: In not too long, all the players should be sitting down.

Discussion

- Ask: *How do mosquitoes start to carry malaria?*
 - *Malaria spreads to mosquitoes when a mosquito bites someone who has malaria.*
- Ask: *How do mosquitoes spread malaria?*

- *After that, everyone else the mosquito bites gets malaria.*
- Ask: *Is malaria easy to spread?*
 - *Malaria spreads quickly from mosquito to person and from person to mosquito.*

Round 3

Mark an area as “The Clinic.”

- Mostly the same rules as round 2.
- Now a sick player sits down, count to 3, and can then stand up and run to the clinic (show the marked area).
- At the clinic, sick players take 5 doses of antimalarials, which means they turn in a circle 5 times. Once they have finished 5 doses (circles), they no longer have malaria and can re-join the game running around.
- Mosquitoes are not allowed to lurk near the clinic.
- It might be that the epidemic dies down at once. If it gets started, it should not spread as easily.

Discussion

- Ask: *What happened? Were more or fewer people sick? Why?*
 - *Curing malaria is a type of prevention.*

Round 4

- Mostly the same rules as round 2 – that is, no antimalarials or clinic and sick people just sit down.
- Secretly give three people a piece of paper representing insecticide treated bednets. When a mosquito goes to tag those people, the mosquito dies.
 - Note: Players with these nets are allowed to pretend to be sick people. The mosquito dies who catches them.

Discussion

- Ask: *What happened?*
- Ask: *Did people with nets ever get sick?*
- Ask: *Were more or fewer people sick? Why?*
 - *Each person with a bednet helps protects even people without a net. You want your neighbor to have a net to protect you.*

Key words: Outdoor game, Prevention, Malaria, Bednets, curing, antimalarials

Story: My Castle

Objectives: Students learn to think of bednets both as protection from mosquitoes and as a fun thing to sleep under

Time: 30 minutes

What you need

- Story book

Ages: 3-9 years

Preparation

- If necessary, translate the story.
 - Note: You can contact David Levine and he will work with you to put translated text onto the picture book. Levine@haas.berkeley.edu

Activity

- For younger children: Read them the story.
- Older children can read in their language or (if appropriate) in English

Discussion

Ask

- *Why does the hero of the story at first not use a bednet?*
- *What happens when the hero does not sleep under a bednet?*
- *Why does the hero end up liking the bednet?*

Key words: Demonstration, Prevention, Malaria, Bednets

Classroom game: Beat the Mosquito⁴

Objective: Demonstrate how malaria is transmitted, and that bednets can keep mosquitoes away. Emphasize the value of 100% net coverage.

What you need

You need four types of cards totaling the group size:

1. 1 card depicting a mosquito
2. Several cards depicting people ill with malaria
3. Cards depicting normal, healthy people
4. Cards depicting insecticide-treated bed-nets.

Activity

- Explain: *Everybody except the mosquito keeps their cards and characters secret.*
- Deal out all the cards.
- The mosquito announces who he or she is and decides whom he or she wants to bite. If the person who the mosquito chooses to bite is a bed net, the mosquito loses (as the insecticide in the net kills the mosquito). The mosquito leaves the game.
- If the person who the mosquito chooses is a healthy human being, **NOTHING HAPPENS**. The the game just goes on to the next round.
 - Collect the cards and deal them out again. Ask the new mosquito to bite someone.
- If the person who the mosquito chooses is has a "malaria" card (and hence is infected with malaria), then they both team up and decide whom to bite.
 - If they chose to bite a healthy person, then the healthy person becomes infected and leaves the game.
 - If they bite a bed net, the mosquito and malaria patient both lose, and leave the game.
 - Remove one non-mosquito card and start a new round. Make sure at least one malaria card is left in the deck.
 - If they bite someone who already has a malaria card, they choose again.

⁴ By Gautam Srikanth

- After biting someone with a net or who does not have malaria, start the next round.
 - Collect the cards and deal them out again. Ask the new mosquito to bite someone.
- **Ending the game:** Continue until all but two students have left the game. (That is, all other students have either been a mosquito killed by a bednet or a healthy person infected with malaria.)
- Deal out two cards: a “bed net” card and a “healthy person” card. When the students ask who won, explain that the healthy person could not have won against malaria without a bednet, and similarly the bednet would have been of no use without the human being. Hence, both are winners.

Discussion

Ask:

1. *How did the mosquito become dangerous?*
 - *Biting an infected person.*
2. *What would happen if nobody in the game were infected with malaria?*
 - *Mosquito bites would do no harm.*
3. *Can we defeat malaria? How?*
 - *If we all sleep under bednets.*

Experiment: Covered water jars & bugs

Preparation

Check there are many uncovered water jars in the community and that most of the uncovered jars have bugs living in them. If not enough uncovered jugs or if uncovered jugs rarely have bugs, do not perform this experiment.

Objective: Have students show that jugs in their community need covers to avoid hosting bugs.

Activity

1. Identify ten or so local water jars without covers and some with covers. Count the # of jars in each group that have bugs in them.

Optional:

2. Add covers to the uncovered jars. Return a week later. Do they still have bugs?

Discussion

Why is it important to cover water jars?

Experiment: Bug bites with and without bednets

Objective: Have students count their own bug bites before and after they have bednets and see how nets protect them.

Preparation

Have a few students report how many mosquito bites they received in the last few nights. If the number is fewer than 10 recognizable bites, do not try this exercise.

Activity

- Have the class report their # of bites.
- Create a group of high-bite students.
 - Among that group: Randomly pick a few students to borrow a bednet for a few nights.
- At the end of the few nights:
 - How many bites for the median students with nets?
 - Without nets?

Discussion

Why did #bites / kid decline in the bednet group?

Experiment: What kills mosquitoes?

Q: Would it work to find some mosquito larvae and show what kills them?

Examples might include:

- Experiments with mosquito-eating fish
- Put mosquitoes in a container. Show how insecticide-treated nets kill mosquitoes

Class participation story: Bednets

Objective: Students learn that insecticide-treated (“bug-killing”) bednets keep them safe from mosquitoes.

Ages: 5-9

Time: 10 minutes

What you need:

Optional: You can make cards showing the words and sounds that go with them. These cards could be words or pictures. If possible, the reader can hold up the cue card showing the action.

Activity

Explain:

We will all read a story together. When you hear each special word in the story, make these sounds and movements.

<u>Special word</u>		<u>Sound that goes with it</u>
MOSQUITO	=>	“BUZZ BUZZ”
SWAT	=>	swat your arm
SLEEP	=>	Snores
MOMMY	=>	Sweet sounds or “I love you”
BUG-KILLING BEDNET	=>	Bonk head and make dying sound “achhhh”.

Note: If helpful, write these words and the action on the board. Otherwise, practice a few times.

Read:

There are a lot of MOSQUITOES in my room.

I have to SWAT them all the time. I wish I could SLEEP.



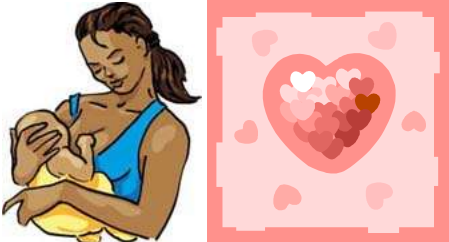


I wish my MOMMY were here. She went to get me a BUG-KILLING BEDNET.

But without a BUG-KILLING BEDNET, I cannot SLEEP. I just sit here surrounded by MOSQUITOES. It is hard to SWAT so many.

Hey, I see my MOMMY! Beware you MOSQUITOES, she has a BUG-KILLING BEDNET!

Now the MOSQUITOES do not bother me. I crawl under my BUG-KILLING BEDNET. I am safe. I go to SLEEP.

Appendix: Cue cards⁵

<u>Special word</u>	<u>Sound</u>	<u>Sound</u>
MOSQUITO		“BUZZ BUZZ”
SWAT		Swat your arm
MOMMY		“Ooh, I love you”
BUG-KILLING BEDNET		Bonk head & “achhhh”
SLEEP		Snores

Option: Cut these cards out and hold them up when you read each special word.

⁵ Art from <http://www.clker.com/clipart-4258.html>
<http://www.atlanta.k12.ga.us/domain/3984>
<http://www.clker.com/clipart-mosquito.html>
<http://www.clker.com/clipart-4256.html>

Classroom game: Stop the Mosquito⁶

What you need: Real mosquito net + large room or an outdoor area

Number of players: 4 to 40

Ages: 6 and up.

Time required: 15 minutes

Activity

- Divide the kids into two teams, A and B.
 - The A team is the Mosquitoes first, and the B team are the first Kids & Doctors.
- Start Round 1
 - One A team member is the first Mosquito. The Mosquito stands at one end of a room
 - Three students from the B team are Kid1, Kid2 and Kid3. The three Kids stand towards the other end of the room, spread out in a line across the class. Another student from the B team is the Doctor. The Doctor holds a real mosquito net and stands behind the 3 Kids.
 - The teacher says “Start.” The Doctor must protect the Kids by putting the mosquito net over them before the mosquito tags a Kid. The Mosquito is not allowed to run. (See Figure 1)
 - If the Mosquito tags a Kid before the Kid is under the net, the A team gets one point. Otherwise the B team gets one point.

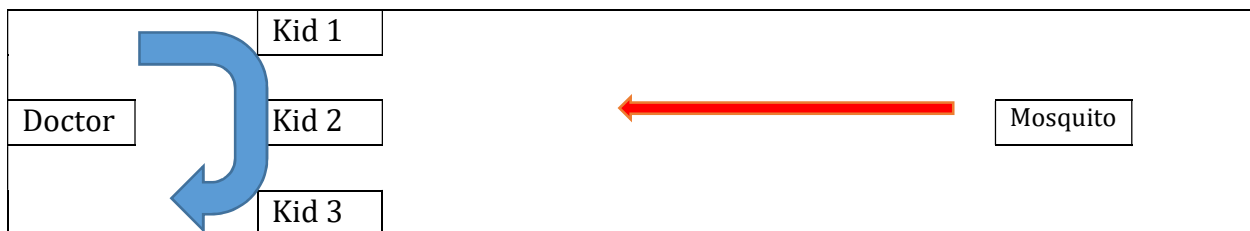


Figure 1: Stop the Mosquito

The mosquito walks rapidly towards the Kids (skinny red arrow pointing left). The Doctor walks rapidly to the three Kids and covers them with the Bednet (curved blue arrow).

- Next round
 - After a round, Kid1 becomes Kid2, Kid2 becomes Kid3, a new student from team A becomes Kid1, and Kid3 becomes the Doctor. The Doctor goes to the back of the A team's line. Also, after each round a new Mosquito replaces the old Mosquito from the B team and the old Mosquito goes to the back of the B line.
- Switching roles

⁶ By Gautam Srikanth

- After all the A team have been Doctor and all the B team have been Mosquito, the teams switch sides and the A team take turns as Mosquitoes and the B team takes turns as Kids and the Doctor.
- Ending the game
 - After all students have been both Doctor and Mosquito, the game is over.
 - Whichever team has the most points wins!

Simulation: Why take the Right Medicine?

Objectives: Students learn they need to know the cause before picking a medicine

Time: 20 minutes

Ages: 6- adult

What you need

Three tools and three tasks, where each tools match only one task. For example, 3 of:

Task	Tool
Cut meat	knife
Eat soup	spoon
Spear little pieces of something round	fork
Dig a big hole	shovel

Activity

Have the students try to do a task with the wrong tool. For example:

Task	Tool	How well does it work?
Cut meat	Spoon	☹
Eat soup	Fork	☹
Spear little pieces of something round	Butter knife	☹

Then have them perform the task with the right tool:

Task	Tool	How well does it work?
Cut meat	knife	☺
Eat soup	spoon	☺
Spear little pieces of something round	fork	☺

Note: Pick whatever tools and tasks fit this setting. For example, the mismatch could be

Task	Tool	How well does it work?
Eat rice	Shovel	☹
Dig a hole	Chopsticks	☹

Ah, you have to figure out the right tool for the job!

Both the flu and malaria can give fever, chills and a headache. That is why you need to take a rapid malaria test before starting antimalarials.

Only take the right medicine, otherwise you are

- Wasting money

- Suffering side effects for no benefit!

More generally, for most colds and the flu, antibiotics and other medicines do not help! As we talked about earlier, you just need rest and safe fluids for your immune system to win that fight!

Keywords: Simulation, Treatment, Malaria, Flu, Diagnose

Simulation: Finishing doses to stop super-bugs

Objectives: Students learn why they need to finish their medicines, even if they feel better

Ages: 6-adult

Time required: 10 minutes (?)

What you need: A deck of cards, using only 1 through 10.

Preparation

Activity

If there are a million malaria parasites in you, the first dose of medicine kills all the weak ones and most of the strong ones. You feel better. What is left in you?

The STRONG ONES.

If you don't finish your medicine, you get super-bugs!

Everyone gets a card 1-10. The card represents a germ, and the number represents how strong it is.

“The kid takes the first dose of medicine.

- “If card is 1-7, the germ dies from first dose.
- “If card is 8-10, the germ survives, but is weakened.

“The kid takes the second dose of medicine.

- “If card is 8 or 9, then die from 2nd dose, and 10s are very weakened.
- “How many bugs are left inside you? Only 10%! How do you think you feel?”
 - Wait for: You feel a lot better!
- “Should you stop taking your medicine?”
- “Let's think about it: what bugs are left after 2 days?”
 - Wait for: The toughest bugs survive!

“The kid takes the third dose of medicine.”

- “If the card is 10, then even the strong germs die from 3rd dose.”

Discussion

- Why should you finish your medicine?
- Hope they explain: Take *all* the doses of your medicine or you may get sick soon again.

Harder to explain: Also, you are breeding super-bugs. Eventually, not even the 3rd dose will kill them!

Keywords: Simulation, Treatment, Malaria, Complete your dose

Classroom game: I See

Objective: Students practice acting safe behaviors

Ages: 5-8

What you need: 2 or more players

Activity

- Explain that when you say “I see” the students should reply, “What do you see?”
- Then you will name a behavior, and the students should act it out.
- The behaviors can mix safe behaviors (washing hands, etc.) with silly ones (hopping on one foot, etc.).

For example:

- Teacher: “I see”
- Students: “What do you see?”
- Teacher: “I see a child:

Silly behaviors
Hopping on one foot
Shutting their eyes
Clapping hands two times
Flapping their elbows like a chicken
Making a silly face
Etc.
Safe behaviors
Brushing teeth
Washing hands with soap
Using a latrine
Boiling water
Sleeping under a bednet
Etc.

Card game: Bedents vs. Bad Bugs

Objective: Compete to make a row of three ways water gets dirty, or 3 ways to make water safe.

Ages: 7-adult

Time: 10 minutes

What you need: Water, Water, Water uses the same rules and board as **Error! Reference source not found.**, but uses different cards.

You can print these cards or draw your own.



Classroom game: BINGO

Ages: 6 and up

Number of players: 2 or more

Time required: 20 minutes

What you need

Print out cards such as this one (but with random order of cells) for each child or 2.

Cholera	Malaria	Flies	Water filters	Worms that live in the ground and attack you
Condoms	Immunizations	No grazing	Anti-malarials	Latrine
Boiling water	Diarrhea	Health Clinic (Free Space)	Cover water jugs	Second-hand tobacco smoke
Deworming pills	Mosquitoes	Abstinence	Measles	Improved stove with chimney
Avoid indoor smoky cookstoves	Shoes	Helmet when riding a motorcycle	Insecticide-treated bednets	Washing hands with soap

Clues are facts they should know about each word. The clues and words should be tightly linked to recent curriculum.

A single clue should apply to only one word. For example, do not have “Effective water treatment” be the clue for both “Chlorine” and “Boiling.” Instead, you might have “Effective water treatment with a chemical” and “Effective water treatment without a chemical”.

As you call out cells, students cross out any cell they find on their card.

Everybody gets the Free Space marked when the game begins.
 Whoever gets 5 in a row (up and down, sideways, or diagonally) wins that round!

Example of 2 bingo cards at the end of one game:

Bingo for Life					Bingo for Life				
Mosquitoes	Measles	Washing hands with soap	Malaria	Second-hand tobacco smoke	Cholera	Be faithful	Abstinence	Helmet when riding a motorcycle	Anti-malarials
Cover water jugs	Shoes	Worms that live in the ground and attack you	Immunizations	Be faithful	Insecticide-treated bednets	Deworming pills	Shoes	Mosquitoes	Diarrhea
Flies	Helmet when riding a motorcycle	Health Clinic Free Space	Vitamins	Boiling water	Second-hand tobacco smoke	Measles	Health Clinic Free Space	Worms that live in the ground and attack you	Water filters
Abstinence	Improved stove with chimney	Deworming pills	Condoms	Diarrhea	Immunizations	Condoms	Cover water jugs	Washing hands with soap	Flies
Water filters	Cholera	Anti-malarials	Latrine	Insecticide-treated bednets	Improved stove with chimney	Vitamins	Malaria	Latrine	Boiling water

In this example game the teacher has called out the clues: Deworming pills, Cover water jugs, Malaria, Boiling water, Washing hands with soap, and Flies. The last thing the teacher called was Cholera. Now the player on the right has 5 in a row on the diagonal starting in the upper left (the green dashed line): Cholera, Deworming, Free Space (Health Clinic), Washing and Boiling Water.

	Bingo card information	Typical clues might include:
1	Cholera	Extremely serious form of diarrhea that can kill you in a day or two.
2	Condoms	Effective way to prevent the spread of HIV, even if you are having sex
3	Boiling water	Way to make sure water has no germs in it
4	Deworming pills	Way to stop parasites from living inside of you.
5	Shoes	Things you wear that stop worms in the ground from attacking you!
6	Malaria	Disease carried by mosquitoes
7	Immunizations	Shots that can prevent diseases such as measles
8	Diarrhea	Can be treated with Oral Rehydration Solution (ORS) OR: Comes from eating food or drinking water has poop in it.
9	Mosquitoes	Their bites can carry malaria
10	Helmet when riding a motorcycle	Way to minimize injuries in traffic accidents
	Flies	Little insects that can carry poop and germs from poop in a field to your food
	No grazing / be faithful	A great way to avoid HIV by avoiding multiple partners

	Abstinence	The most effective way to stop the spread of HIV
	Cover water jugs	Way to stop mosquitoes from having a place to lay eggs
	Measles	Disease that spreads very easily unless you have an immunization
	Insecticide-treated bednets	Ways to keep malaria-carrying mosquitoes away
	Water filters	Ways to keep water from having germs
	Anti-malarials	Ways to treat malaria
	Worms that live in the ground and attack you	Parasites that steal your energy
	Latrine	Safe place to put poop
	Second-hand tobacco smoke	Dangerous substance from cigarettes
	Improved stove with chimney	Way to keep harmful cookfire smoke from children
	Washing hands with soap	Ways to make sure your hands have no germs after defecating

- Note: Probably only fun a time or 2.
- More fun if there are small prizes.
- You can make and print Bingo cards in Excel at http://people.uncw.edu/ertzbergerj/excel_games.html
- If working with a Latin alphabet, teachers can generate printable Bingo cards for free at: <http://osric.com/bingo-card-generator/>. Typical output is:

Bingo for Life					Bingo for Life				
Mosquitoes	Measles	Washing hands with soap	Malaria	Second-hand tobacco smoke	Cholera	Be faithful	Abstinence	Helmet when riding a motorcycle	Anti-malarials
Cover water jugs	Shoes	Worms that live in the ground and attack you	Immunizations	Be faithful	Insecticide-treated bednets	Deworming pills	Shoes	Mosquitoes	Diarrhea
Flies	Helmet when riding a motorcycle	Health Clinic Free Space	Vitamins	Boiling water	Second-hand tobacco smoke	Measles	Health Clinic Free Space	Worms that live in the ground and attack you	Water filters
Abstinence	Improved stove with chimney	Deworming pills	Condoms	Diarrhea	Immunizations	Condoms	Cover water jugs	Washing hands with soap	Flies
Water filters	Cholera	Anti-malarials	Latrine	Insecticide-treated bednets	Improved stove with chimney	Vitamins	Malaria	Latrine	Boiling water

Warning: You have to remove all punctuation (“-“, “!”, etc.).

There are several ways for the leader to randomize:

- Pick one card no child is using and run down its list in order. Then look up the clue that goes with each term on your card, and call out the clue.

- Because the cards use a random order, this method calls the clues out in random order.
- Pull numbered balls or pieces of paper from a bowl, use a spinner, or table of random numbers to run down the numbered list of clues.
- Cut up the clues and put them in a bowl. Then draw them in random order.

Outdoor game: The “How do germs move” Relay Race⁷

Objective: This team game uses peer education and team spirit to reinforce the ways different germs move.

Number of players: 4-20 (?)

Ages: 7-14 (?)

Time required: 20 minutes (?)

What you need: paper, pens, a box or basket for each team

Preparation

Divide the group into two or more teams. Each student must divide an A4 or letter-sized sheet of paper into 8 sections by folding it in half three times. Tear or use scissors to create 8 rectangles of paper. On each rectangle, the learner must write one of these 8 *Disease tokens*: cold, flu, measles, malaria, diarrhea, diarrhea, diarrhea, and worms. (Note that diarrhea appears three times.)

Note: It is fine to alter the *Disease tokens* or *How germs move*

Fold the 8 rectangles in half to make *Disease tokens*. Place all the *Disease tokens* in an open box or basket to create the game basket.

Each team must create eight **How germs move** signs: sneezes in the air, sneezes on hands, sneezes and coughs on food, poop on hands that did not wash with soap, poopy water, poop on a fly, mosquito, & in the dirt.

Variation: instead of “How germs move” signs, do “**How to prevent disease**” signs:

Cover your cough, immunize, wash hands after you poop, wash hands after you sneeze, wear shoes, bednet,

Activity: How to play

Each team must stand in a queue. In front of each team are the eight *How germs move signs* on the ground in front of them. When the group leader shouts “Go!” the players at the front of each line run to the basket to collect a *Disease token*. As they run back they read the token silently, fold it again, and put it on one of the *How germs move* signs that does not yet have a disease on it.

These piles of paper may not be touched by the team until the end of the game. As the *Disease token* lands on a *How germs move* sign, the next team member runs to the game basket.

The running part of the game stops when all a team’s players have run. At this point the winning team must shout “SAFE!” and all sit down. If any other teams’ players are holding a *Disease token*, they may run back to their team and put the token in the correct pile; if they are running to the basket, they must stop.

The game continues with a check of the fastest team’s piles. The group leader must observe to ensure there is no cheating and no bullying of anyone who may have made an understandable mistake. During the count, the other teams may not touch their piles. This is

⁷ Adapted from Locks, *et al.* 2006 “C:\Users\David\Documents\My Dropbox\Development & Art\Games\Other games\Activity_Book_Final_Acrobat5.pdf”

because they may not have lost – it is possible for the second or third team to win if the other teams have not ensured that everyone in the team knows how each germ moves. The group leader then checks the other teams’ piles. The team that finishes first, with **all** *Disease tokens* in the correct piles, wins!

Disease or symptom	How germs move	Prevention
Measles	Sneezes on hands	Immunize
Cold and flu	Sneezes on hands	Wash hands with soap
Cold and flu	Sneezes and coughs on food	Cough and sneeze in your elbow
Diarrhea	Poop on hands	Wash hands with soap
Diarrhea	Flies spreading poop	Poop in a latrine
Diarrhea	Poopy water	Boil or chlorinate or filter
Worms	Pooped on the dirt and wait for you to walk on them	Shoes
Worms	Pooped on the dirt and wait for you to walk on them	Poop in a latrine
Japanese Encephalitis	Mosquitoes	Bednets
Malaria	Mosquitoes	Bednets

Note: Highlighted items sharing a color are repeated in a column. The game works best if tokens are used only once, but it is ok to have repeated signs on the ground.

Card game: Fishing for Health

Objective

A card game similar to Go Fish where players match health hazards (mosquitoes, dirty hands, contaminated water, measles, intestinal worms, etc.) to appropriate preventions (bed nets, soap, etc.). For example, “I have *Mosquitoes*. Do you have a *Bednet*?”

Players: 2 to 6 (3 or 4 are best)

Ages: 5 and up

Time needed: 20 minutes

What you need: A deck with two types of cards:

- Health hazards such as mosquitoes
- Preventions such as bednets that match each hazard
- A 40-card deck will work.

How to play

To start

- Deal 4 cards to each player (if 3-6 players), or 6 cards if 2 players.
- Place remaining cards face down as a draw pile.
- Any player with both a Hazard and the matching Prevention in their hand makes a pair, tells everyone what the pair is, and puts the pair in front of them. The player draws another pair of cards, continuing until no hand contains a matching pair.
- Select a player at random to go first.

Game play

The first player asks another player for a specific Prevention for any Hazard that the first player holds or for a Hazard that the first player can Prevent. For example: “Sarah, I have Mosquitoes, give me your Bednets.” If Sarah has more than one Bednet card, she must offer the first player all of them. The first player can take no more than he or she can use that turn (for example, no more Bednets than his or her hand has Mosquitoes).

If the first player gets one or more cards from the player you ask, that player gets another turn. The first player can ask any player for any card that pairs with one he or she already holds, including the same card the first player just asked for.

If the person has none of the cards the first player requested, he or she says, “Go fish.” The first player then draws the top card from the draw pile.

If the first player happens to draw the card he or she asked for (that is, “fished your wish”), that player announces the pair, puts the pair face up, and gets another turn. However, if the first player draws a card that's not what he or she asked for (even if it makes a pair), it becomes the next player's turn. The first player keeps the drawn card.

The player who said, “Go fish” then takes a turn.

Winning

Fishing for Health continues until either someone has no cards left in their hand or the draw pile runs out. The winner is the player who has put down the most pairs of Hazards and matching Preventions.

Card game: Memory

Memory, also known as *Concentration*, is a card game that teaches what prevents certain health hazards. For example, the player who turns over *Mosquitoes* has to remember where another player had previously turned over a *Bednet*.

- **Players:** 1 to 6
- **Ages:** 5 and up
- **Time needed:** 10 minutes

What you need: A deck of printed cards with

- Health hazards such as mosquitoes
- Preventions such as bednets that match each hazard

- **Topics covered:** matching health hazards (mosquitoes, dirty hands, contaminated water, measles, intestinal worms, smoky cookstoves, indoor smoking) to appropriate preventions (bed nets, soap, etc.).
- **Goal:** To collect the most pairs of cards.

How to play

Setup

Shuffle the cards and lay them on the table, face down, in a pattern (e.g. 4 cards x 13 cards).

Gameplay

The youngest player goes first. Play then proceeds clockwise.

On each turn, a player turns over two cards (one at a time) and keeps them if they are a Hazard and the matching Prevention. If the player successfully matches a pair, that player also gets to take another turn.

When a player turns over two cards that either are identical (for example, 2 mosquitoes) or do not match, those cards are turned face down again and it becomes the next player's turn.

Winning

When all the pairs have been found, the player with the most pairs wins.

Card game: Health Lotto

Ages

- Basic version: ages 5-8
- Advanced version: ages 7-12

Objective: Cover up all face-up cards

Number of players: 2 to 20

Equipment

- Deck of cards with 2 or more of each Prevention per player.
- Advanced version: 1 Hazard per player and 1 or more Prevention per player

Preparation

- Give each player 5 different Prevention cards (1 Bednets, 1 Soap, etc.).
- Players arrange their Preventions face up in front of them.
- Decide who goes first

Variations

- Deal each player a set of 5 cards at random, so some players will have duplicates face up
- Older players can start with more than five face-up cards

How to play (basic version)

- The first player draws one card.
 - If the drawn card matches an uncovered card the player has, the player covers the matching card.
 - If there is no match with an uncovered card, the player returns the card to the bottom of the pile.
 - The turn moves to the left.

First player to cover all their face-up cards wins!

Advanced variation (ages 7-12)

- Deal out one of each Hazard to each player. Leave the deck with only Preventions. Players must draw the matching Prevention so they prevent (cover up) each Hazard. First player to “prevent all their hazards” (that is, cover all their face-up hazard cards) wins!
 - Variation: Deal out a mix of hazards and preventions. The deck also contains a mix of hazards and preventions. Players must draw the prevention to match each hazard and the hazard to match each prevention.
 - note: Unlike “Go fish,” there is no matching from the initial deal.

Add Malaria content to multi-topic activities

Arts: Skits, Poster, & Song on malaria topics

Objective: Reinforce bednet usage

Activity

Ask students to make a skit, poster and/or song on malaria, preventing malaria and treating malaria.

See details of each activity in [Handwashing Unit](#).

Possible scenarios about malaria include

- The actors act as mosquitoes in a village with no bednets, and then in a village *with* bednets.
- Drama version of the [mosquito simulation](#):
 - Scene 1: A group of mosquitoes spread malaria, showing how the disease spreads from kid to kid.
 - Scene 2: Then most the kids have insecticide-treated nets, and the mosquitoes act out their own dramatic death – with minimal disease for the kids!
- One family does not use bednets and a kid gets malaria.
 - Then, even a few kids who sleep under a net gets bitten, just before bedtime.
 - The kids search near the new case to find out who started the local epidemic.
 - All the families now at risk teach the first family to use a net.
- Monkey and Chimp story: “All Alone”
- *My Castle*
- A mother is worried her children are often sick with malaria. (if not too scary: She has heard that some children can even die from the disease.) Somehow she learns of nets. Perhaps a challenge to get money for nets. She gets nets. Kids are healthier.

Reminder: Expand prior Class agreement

Objective: Increase bednet usage

Time: 10 minutes

What you need: Prior class agreement form

Activity

Ask students how knowledge of malaria will affect the class contract. See if there is a consensus similar to: We will all sleep under a bednet each night.

If families find nets expensive, perhaps the rule is: I will ask my parents for a bednet. If I own one, I will sleep under a bednet each night.

Reminder: Reinforce the habit of Bednet use

Objective: Create a habit of sleeping under a bednet.

Time: 15 minutes

Preparation: none

Activity

See “[Reinforce habits...](#)” in handwashing section.

Apply the principles of creating small new habits to covering sleeping under a bednet. That is, each time you prepare the bednet for use or tuck under a bednet, reward 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!

Practice explaining about bednets

Objective: Have students practice explaining to a younger sibling why it is important to use a bednet.

Time: 10 minutes

Ages: 7 and up

Activity

Have students practice explaining to a younger sibling why it is important to sleep under a bednet.

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

- Malaria is a serious disease
- Mosquito bites cause malaria
- If we sleep under bednets, we can avoid malaria
- If *you* sleep under a net, then *I* am safer.

Existing Health Club adds malaria topics

Ask students if their new knowledge of malaria adds to the list of club projects. Candidates they might suggest include:

- Community assessment
- Fight against mosquitoes
 - Get rid of mosquitoes by eliminating standing water and by covering water jars
 - Question: Should we teach all children to cover water jars at home?

- Campaign for bednets
 - Remind each term for parents to re-treat bednets with insecticide (unless it is a net with long-lasting insecticide built in)
 - A group of students could circulate at bedtime singing the bednet reminder song, for example.

Classroom game: Alternate reality version 1 and 2 xx

Assessment: Household survey to engage family on malaria topics

Objective: Students bring a brief assessment home to spark a discussion of malaria topics with their parents and family

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

Activity

- Students bring an assessment home on malaria topics
- 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).

Dear parent:

We would like your child to circle an answer to each question.

Please put your name or mark to show your child has talked about their answers with you.

Student's name _____

- 1) At home your child has access to a bednet for sleeping.
Always Usually Sometimes Rarely Never
- 2) Has your child explained to his or her younger siblings why it is important to sleep under a bednet each night?
Yes No There are no younger family members

Option: Should we have a more open-ended question such as “What are obstacles to bednets at your home?” The student won't write down many of the replies, but such questions spark better discussions.

<<Note: If the student did a poster, you can add>>

- 3) Your child shared the poster with your family and discussed its message.
Yes No

Parent's signature or mark _____

Discussion

- Remind each term for parents to re-treat bednets with insecticide (unless it is a net with long-lasting insecticide built in)
- Ask *How did you parents treat the assessment?*
 - *What did you have a chance to explain from what you have learned?*
 - *For families with no nets: Do parents have more interest in acquiring a bed net?*
- *How did it go teaching younger family members?*

Quiz

Question	Answer
Why is a neighbor who does not sleep under a bednet a health problem for you?	If your neighbor has no net, it is more likely that mosquito will give you malaria!
How can you stop mosquito bites at night	Sleep under a bednet
What should you do before you take an Anti-malarial	Get tested for malaria
What is the best type of bednet?	Long-lasting and insecticide treated
How can you stop mosquitoes from growing?	Get rid of standing water and cover water jugs
What are two diseases spread by mosquitoes?	Malaria and dengue fever (or any of several parasites, if you have taught about them.)
What disease causes a fever that often returns each 3 days	Malaria
What are the symptoms of malaria?	Higher fever than a cold
How often should regular insecticide-treated nets be re-treated?	Every 6 months
What should you do if you think you have malaria?	Get a rapid malaria test
If you start anti-malaria medicine, how long do you have to take it for?	Until you finish your dose
What are ways you can make your community safer?	<ol style="list-style-type: none">1. Lobby for bed nets2. Lobby for retreatment of nets3. Encourage eliminating standing water4. Get rid of standing water and cover water jugs

Quiz Game: Jump to Identify What Makes a Mosquito Happy or Sad

Objective: Identify behaviors to avoid mosquitoes

Time: 20 minutes

What you need:

- Chalk (or equivalent) to draw a line in the dirt

Preparation:

- Draw a line in the dirt long enough for every student to stand next to it

Activity:

- Have the students stand on the line.
- Tell them that you will be reading a list of items.
 - Jump to the left of the line when they think the object or behavior makes mosquitoes happy.
 - Jump to the right of the line when the object or behavior makes the mosquitoes sad.
- Objects and behaviors that make mosquitoes happy:
 - Open water jars
 - Puddles and standing water
 - Sleeping without a bednet
 - Neighbor that sleeps without a bednet
 - Old, untreated bednets
 - Puddles
- Objects and behaviors that make mosquitoes sad:
 - Sleeping with a bednet
 - Covered water jugs
 - Insecticide treated bednets
 - Long-lasting bednets
 - Mosquito fish and guppies

Resources on Malaria

Videos (free and online)

****** Science video with lots of advice on avoiding mosquitoes**

<https://www.youtube.com/watch?v=dnugDchZL10>

ages: Secondary school

**** Public service announcement (English, east Africa)**

https://www.youtube.com/watch?v=_8_hszXX0SA

For kids explaining mosquitoes spread malaria.

Computer games (free and online)

[Play the Mosquito Game](#) (Nobel Foundation) online game

[STOP MALARIA NOW! - Online Mosquito Game](#)

Nightmare: Malaria game (free app for Apple iPhones & Android devices)

<https://itunes.apple.com/nz/app/nightmare-malaria/id741194411?mt=8>

You are in the bloodstream of a young girl infected with malaria. Can you make it out alive?

Can you use bednets and your wits to avoid killer mosquitoes?

Comic books (free and online)

Novartis (drug company) Malaria storybook

<http://www.malaria.novartis.com/downloads/friends-against-malaria/storybook.pdf> †

WHO comic book on malaria

http://apps.who.int/iris/bitstream/10665/66424/1/WHO_CDS_CPC_SAT_99.1.pdf †

Curriculum (free and online)

Lots of activities at <http://www.malaria.novartis.com/>

NGOs

Nothing But Nets is a great NGO distributing bednets. <http://nothingbutnets.net/>

Roll Back Malaria is a global program <http://www.rbm.who.int/>. Their country reports are at <http://www.rbm.who.int/multimedia/progress-and-impact-series.html>