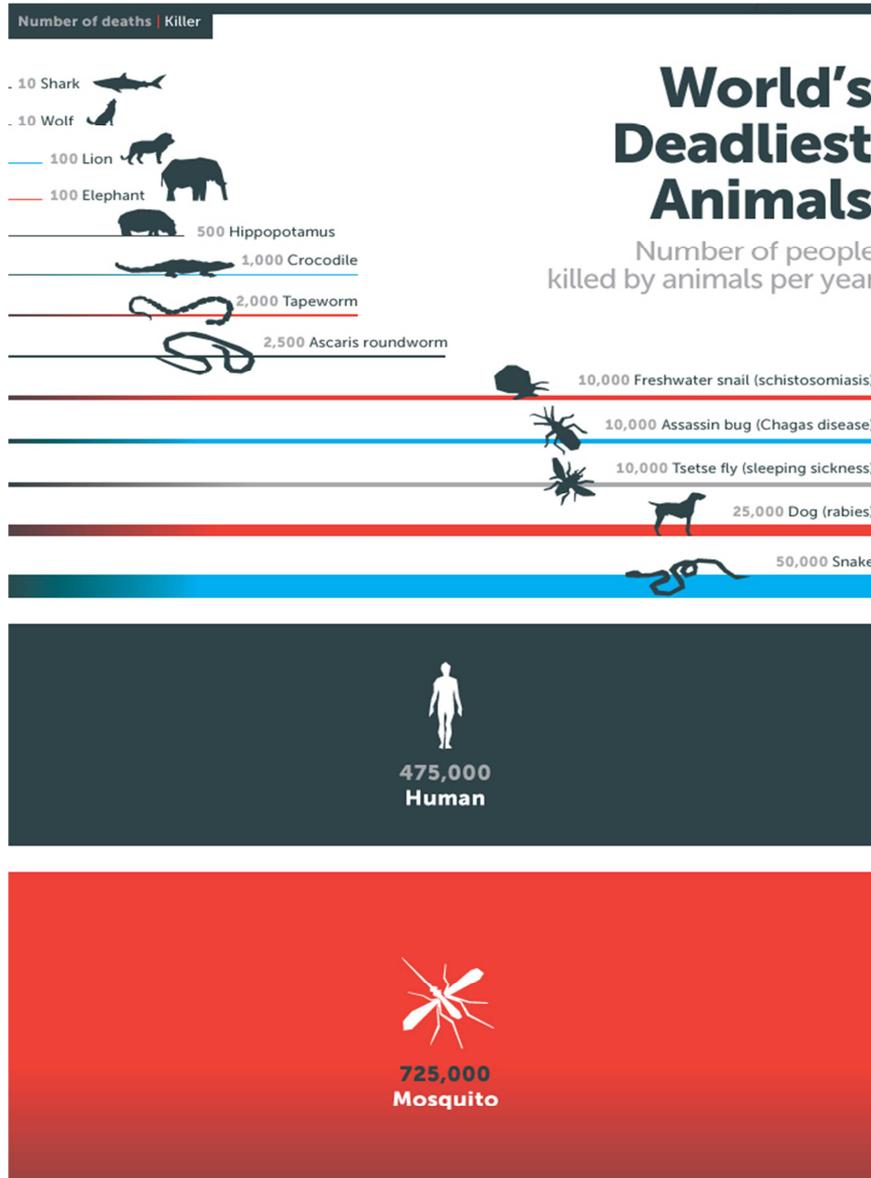


Malaria

Worksheet Teacher's notes

1. Which animal do you think is the most dangerous in the world? Which animal kills the most humans?

Look at the diagram below:



SOURCES: WHO; crocodile-attack.info; Kasturiratne et al. (doi.org/10.1371/journal.pmed.0050218); FAO (webcitation.org/6Ogp58SV0); Linnell et al. (webcitation.org/6ORL7DBUO); Packer et al. (doi.org/10.1038/2F436927a); Alessandro De Maddalena. All calculations have wide error margins.

Why do you think mosquito is the deadliest animal in the world?

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2. What do you know about malaria? Do you know how it is transmitted? Who is at risk of contracting the disease? Which countries have the highest malaria rate?

Go on the Internet and find the answers to these questions. Use these websites:

<http://www.cdc.gov/malaria/map/>

<http://www.yourgenome.org/malariachallenge/>

http://www.who.int/features/factfiles/malaria/malaria_facts/en/

What is malaria? Malaria is a dangerous disease spread by mosquitoes. It is responsible for the illness of one out of every 10 persons admitted to hospitals in Africa. Each year, malaria kills about one million people, most of them children, in the continent.

How does someone get malaria? Malaria is passed from person to person by some mosquitoes. When the mosquito bites a person, it injects into his blood the germs which cause malaria and, as a result, he/she becomes ill later. Mosquitoes breed in water that is not flowing, especially, water caught in holes, pits, empty cans or tins, pots, bottles and anything that can hold water in which they can lay their eggs. Wherever there is water in such containers, there will be mosquitoes which will spread malaria.

Every year, 3.4 billion people are at risk of malaria. This leads to about 207 million malaria cases (with an uncertainty range of 135 million to 287 million) and an estimated 627 000 malaria deaths (with an uncertainty range of 473 000 to 789 000). People living in the poorest countries are the most vulnerable. Children under 5 and pregnant women are at risk.

Then read and try to complete the text with the words given in the box:

1 – 2, 90, 300 million

Africa Brazil children parasite pregnant preventable tropics vaccine vaccine
Vietnam

Malaria remains the most common infective killer throughout the ____1____ and each year ____2____ people are affected by it, with between ____3____ million of these people dying. Around ____4____% of these deaths occur in ____5____, mostly in young ____6____.

____7____ women are also more vulnerable to malaria. Other countries that suffer from malaria include: ____8____ in South America, and Afghanistan, Cambodia, China, India, Indonesia, Sri Lanka, Thailand, and ____9____ in Asia.

Malaria is both curable and ____10____, but what is being done to control this deadly disease? At the moment there is still no ____11____. One of the main problems is that malaria is not a viral disease (like chickenpox for example) but caused by a ____12____. Until an effective ____13____ is developed it is important to prevent malaria in other ways.¹

¹ taken from onestopenglish.com

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1. tropics
2. 300 million
3. 1 - 2
- 4 .90
5. Africa
6. children
7. Pregnant
8. Brazil
9. Vietnam
10. preventable
11. vaccine
12. parasite
13. vaccine

3. What are the symptoms of malaria? Can you imagine how it feels to suffer from the disease?

Symptoms:

One feels cold and begins to shiver. One has a headache and feels pains in his muscles. One becomes weak and gets tired easily. One may start vomiting. One's body feels hot (temperature rises to 38° or 39° C or more). One starts sweating. Then, his body cools down. After a few hours, one's body gets hot again. One's temperature may continue going up and down for several days.

For a first-hand account go to:

<http://www.gatesnotes.com/Health/What-Malaria-Feels-Like-Mosquito-Week>

4. Malaria is not only curable but also preventable. In groups of 3-4 try to come up with ideas how to prevent the spread of the disease. When you need help go to

<http://www.pygmies.net/pages/malaria.html>

<http://www.gatesfoundation.org/What-We-Do/Global-Health/Malaria>

Students' own answers/ try to get similar information:

- Bednets coated in insecticide have reduced the incidence of the disease by up to 35%, according to the World Health Organisation. It has proven to be particularly effective in reducing child mortality in sub-Saharan Africa. Not only are the mosquitoes unable to bite the sleeping person, they are reluctant to land on the net in the first place. Nets need to be re-treated every 6 months to remain really effective. Not just the beds but the whole house should be screened if possible to keep mosquitoes from entering and leaving a building. It also keeps flies away. Screens can be put on windows and doors.

- Taking drugs can help too but this method cannot be used on its own. Drugs can eliminate the parasites so that if a person is later bitten by another mosquito the transmission of malaria is reduced. In addition chloroquine, a safe and cheap drug, is no longer as effective as it used to be. This has happened through overusing anti-malarial drugs.

- Covering up helps too. Mosquitoes like exposed skin so wearing long sleeved tops and trousers is a good idea especially in the early evening when the insects are looking for their supper.

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- Using mosquito repellents is extremely advisable. However, this is more appropriate for those travelling to, or those who are temporarily in, affected countries. For those people who live in malaria zones this method is simply too expensive.

- Similar to repellents is the use of mosquito mats and coils. But again these can be expensive for local people, and in addition some people are allergic to the smoke.

- Fish too can also help to control malaria. In India the World Bank has a programme using guppies and as a result the fish have almost eliminated the Anopheles mosquito from some districts. How does this work? It's simple: fish which like eating mosquito larvae are put in ponds, rivers and wells where mosquitoes lay their eggs. The eggs hatch, and the fish eat the larvae. The advantages are twofold. Firstly the mosquitoes have become resistant to insecticides like DDT, and secondly it is not an expensive programme. Supplying ponds with guppies is a lot cheaper than using insecticide, although it is more effective in some regions than others. There is also a small fish called, appropriately, a mosquito fish, which is particularly effective in small ponds or water tanks.

- The spread of the disease can also be reduced by cutting down the mosquito population through eliminating stagnant water where mosquitoes breed. For example, flowerpots are very popular with mosquitoes, and so are ditches which should be filled.

- And it seems that mosquitoes prefer to bite water buffaloes rather than humans. But in the monsoon season the buffaloes get covered in mud which the mosquitoes don't like. The insects start biting people more instead. So keeping your water buffalo clean helps too!

5. Now it's time to put your knowledge into action! Go to <http://www.peacecorps.gov/kids/> and help the Wanzuzu villagers, good luck!

6. Bill Gates hopes to solve some of the world's biggest problems using a new kind of philanthropy. In this talk he tackles the problem of malaria. Watch the first eight minutes of his talk and answer the questions. Go to :

http://www.ted.com/talks/bill_gates_unplugged

- What two solutions does he mention that were effective in fighting malaria?

People didn't know what caused malaria until the early 1900s, when a British military man figured out that it was mosquitos. So it was everywhere. And two tools helped bring the death rate down. One was killing the mosquitos with DDT. The other was treating the patients with quinine, or quinine derivatives. And so that's why the death rate did come down.

- What comparison does he make between baldness and malaria?

The disease is only in the poorer countries, it doesn't get much investment. For example, there's more money put into baldness drugs than are put into malaria. Now, baldness, it's a terrible thing. And rich men are afflicted. And so that's why that priority has been set.

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- What is a bed net? How does it work?

And bed nets are a great tool. What it means is the mother and child stay under the bed net at night, so the mosquitos that bite late at night can't get at them. And when you use indoor spraying with DDT and those nets you can cut deaths by over 50 percent. And that's happened now in a number of countries. It's great to see.

- Is there a vaccine?

There's new drug discovery going on. Our foundation has backed a vaccine that's going into phase three trial that starts in a couple months. And that should save over two thirds of the lives if it's effective. So we're going to have these new tools.

- What needs to be done to eradicate malaria?
 - to keep the funding high, to keep the visibility high, to tell the success stories
 - to get not just 70 percent of the people to use the bed nets, but 90 percent.
 - we need drug companies to give us their expertise
 - we need rich-world governments to be very generous in providing aid for these things.

7. Now, in groups of four make a poster urging the students at your school to take action and organize a charity event to collect funds to fight malaria. Good luck!