Imagine two kind of cookies, say chocolate and toffee cream cookie. Now you've learned that one kind of these cookies accidentally contains harmful bacteria because something went wrong during the production process. Unfortunately, you don't know which one, chocolate or toffee cream. What you can reason, however, is that people who ate the wrong cookies are more likely to get ill than those who didn't. All you need to find out now is who ate what and who got ill and who didn't. In more technical terms you need to find out the association between exposure (cookies) and outcome (being ill).
And that is exactly what we are going to do in our first exercise.

1. Start by drawing a two-by-two table. By convention we put exposure on the rows and outcome on the coloumns.

	outcome
exposure	

Also by convention we label the first row "ate food" and the lower "did not eat food". Likewise the first coloumn is labelled "ill" and the second "not ill".

„Food“	**ill**	**not ill**	sum
ate „food“			
did not eat „food“			

You should make two tables like these:

Hamburgers	**ill**	**not ill**	sum
ate hamburgers			
did not eat hamburgers			

Mousse	**ill**	**not ill**	sum
ate Mousse			
did not eat Mousse			

2. Let's start your data collection with hamburgers. Ask the audience:
   a) *"Lift your hand if you ate hamburgers and got ill (any symptom)."*
   Fill that number in the top left box of your two-by-two table.
   b) *"Lift your hand if you ate hamburgers and did not get ill."*
   Fill that number in the top middle box of your two-by-two table.
   c) *"Lift your hand if you did not eat hamburgers and got ill (any symptom)."*
   Fill that number in the bottom left box of your two-by-two table.
   d) *"Lift your hand if you did not eat hamburgers and did not get ill."*
   Fill that number in the bottom middle box of your two-by-two table.
It should look this:

Hamburgers	ill	not ill	sum
ate hamburgers	8	2	
did not eat hamburgers	2	4	

Repeat 2) with Mousse. In the 15 people exercise skip the potato salad. If you play with 25 people repeat 2) for potato salad. The table for mousse should look like this:

Mousse	ill	not ill	sum
ate Mousse	5	4	
did not eat Mousse	5	2	

3. calculate the row sums.

4. Calculate the risk for getting ill when eating hamburgers: divide the number of people who "ate hamburgers and got sick" by the row sum of all who "ate hamburgers". (8/10)

5. Calculate the risk for getting ill when NOT eating hamburgers: divide the number of people who "did NOT eat hamburgers and got sick" by the row sum of all who "did NOT eat hamburgers". (2/6)

6. Find out the relative risk of getting ill when eating hamburgers compared to the risk of getting ill when NOT eating hamburgers. To do that, simply divide 4.) by 5.) (=2.4).
If that number is higher than one, it means that eating hamburgers is more likely to make you sick than not eating hamburgers. A relative risk on one means that both risks are the same (dividing two equal numbers = 1).

7. Repeat steps 4-6 for Mousse (0.78)

8. Compare the relatives risks of hamburgers with that of Mousse. Which one is higher? This is your likely outbreak vehicle. Good job!

In the last exercise you covered one of the most important concepts in epidemiology: relative risks. But our investigation does not stop here, we have much more information to distill from our data. If we plot the number of sick people on a time axis, we get an epidemic curve. It tells us a great deal about the dynamics of our outbreak. Different outbreak agents have different dynamics. Food poisoning by, eg. Staphylococcus aureus has a very rapid onset within 2-8 hours whereas bacterial infections need more time.

There is an extended German version of the instructions here:
http://www.epi-teacher.org/dd/TDD-kartenspiel-anleitung.pdf

Check later or mail us if you need a translation.

-changes: July 2013 first version, July 8th 2016 this version with „card 00“