

# Epidemics: Modelling with mathematics



## Standing Disease

You will need:

- lots of people
- room to stand up

The activity:

- Step 1: choose one person to be the first case of Standing Disease - the main symptom is being unable to sit or lie down, you just have to keep standing up.
  - Step 2: it's quite infectious - so that person chooses two more people to be infected.
  - Step 3: each infected person infects two more people.
- ... and so on, until the whole class is infected.

Questions to discuss:

- How many steps did it take the disease to infect the whole class?
- How many people were infected at each stage? How could you describe this number sequence?
- What difference would it make if 3 people were infected at each stage instead of 2? How could you describe that number sequence?
- What about if  $n$  people were infected at each stage?
- How many steps would it take to infect the whole school?
- How about the UK? - the population is about 62 million.
- How about the whole world? - the population is about 7 billion.

How good is this model?

- What aspects of the model tell us something useful about how epidemics progress?
- What does the model predict which doesn't make sense?
- Can you think of ways to improve it?

## Modelling with mathematics: Standing Disease

<https://motivate.maths.org/content/MathsHealth/ModellingEpidemics>

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