Scenario

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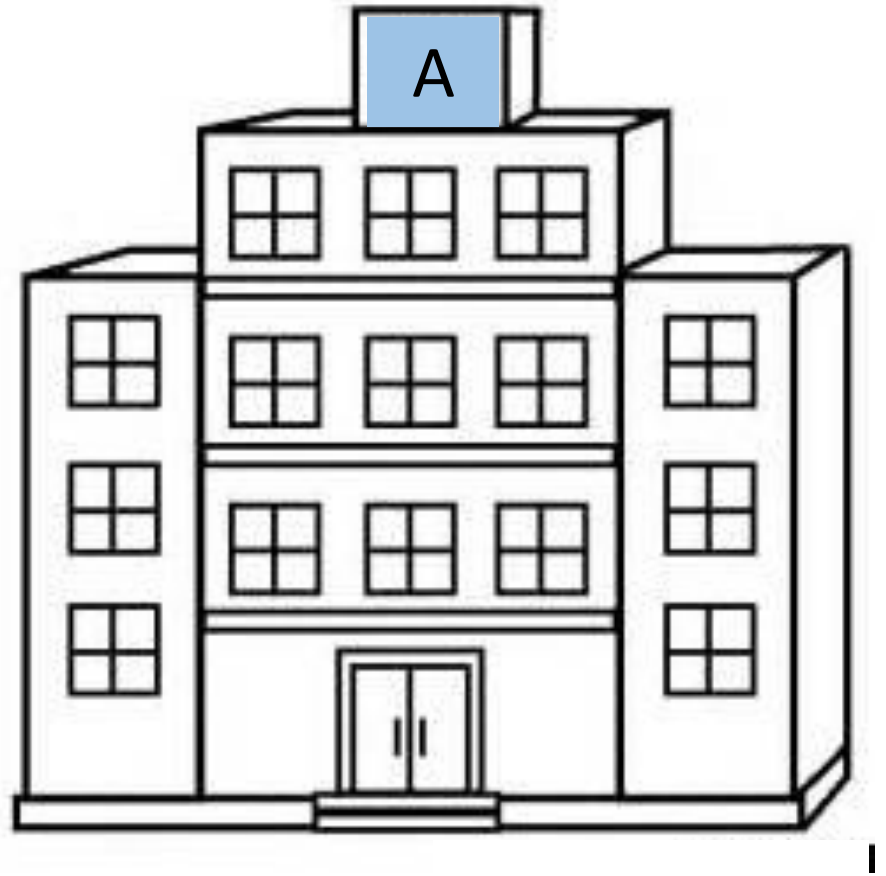
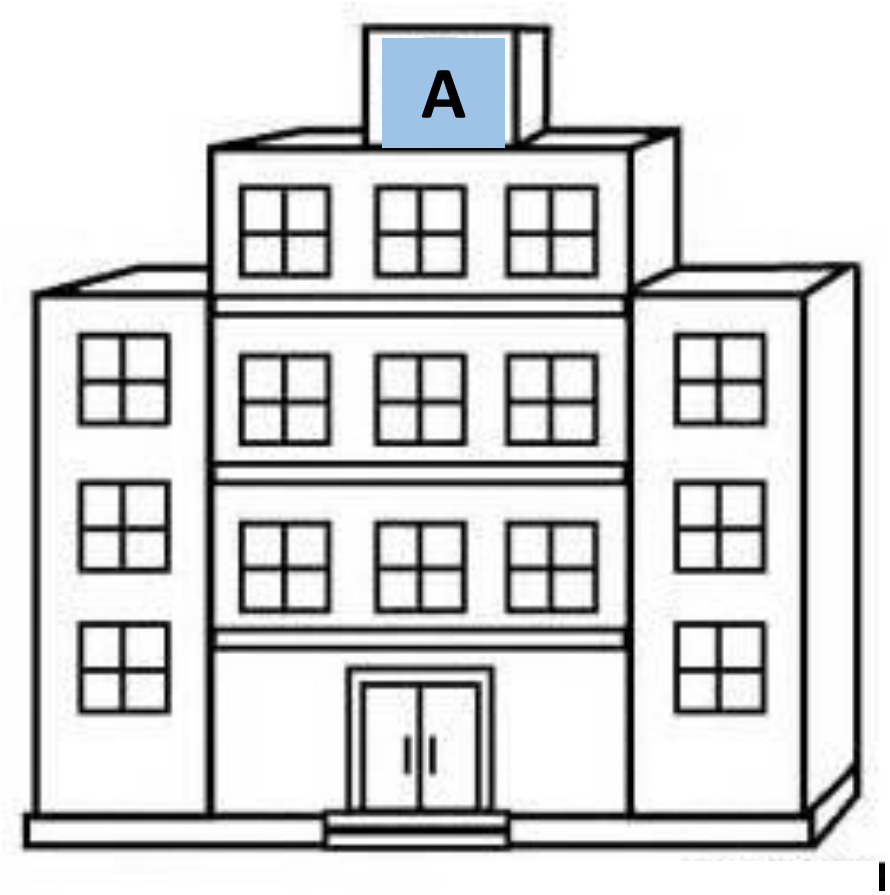
Hospital A

- Let's imagine, you receive care at Hospital A.
- Hospital A, like most hospitals, uses electronic health records or EHRs, to manage their patient records.
- An EHR is a computerized chart that contains information about a patient, including:
  - Diagnoses, medications, clinical visits, test results (e.g. blood tests or x-rays, MRIs), etc.
- There is an EHR for each of Hospital A's patients.



Hospital A

- Hospital A, like other hospitals, looks for ways to improve the care they offer to their patients.
- Hospital A can use the vast amounts of information, *already collected* in their patient EHRs, to answer questions about health care.



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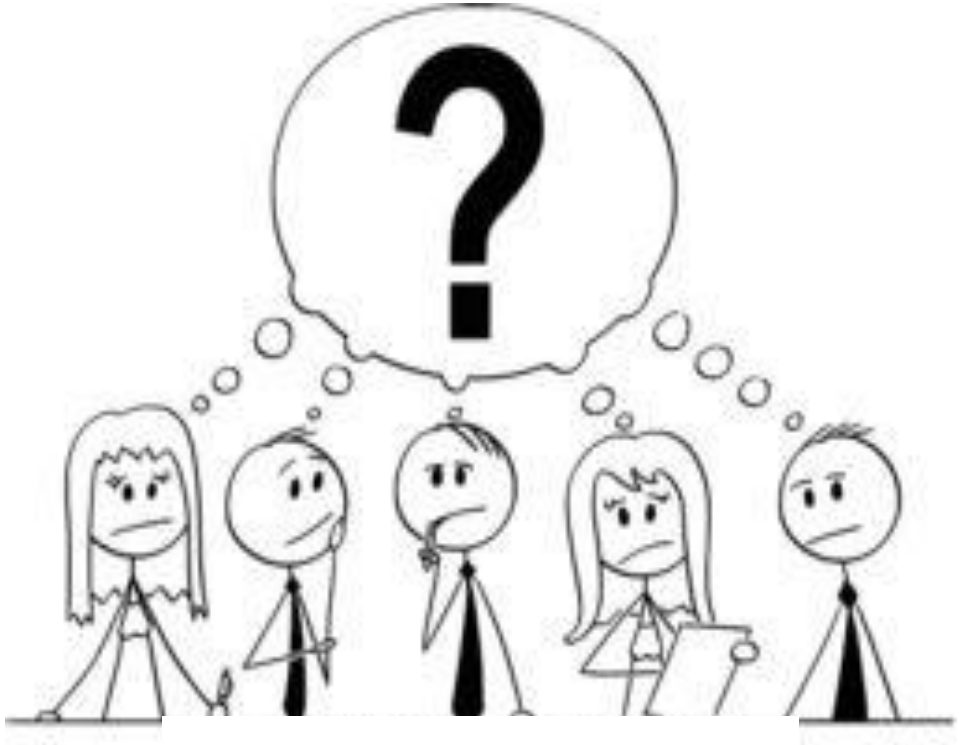
For example:

- The team at Hospital A wants to compare two medications commonly prescribed to treat high blood pressure



Hospital A staff

Which medication works better - DILAX or Relaxil?

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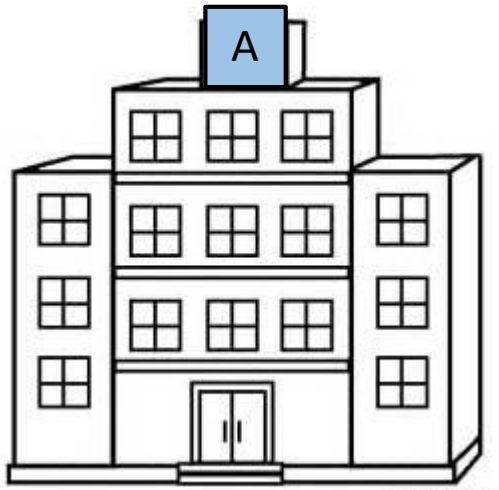
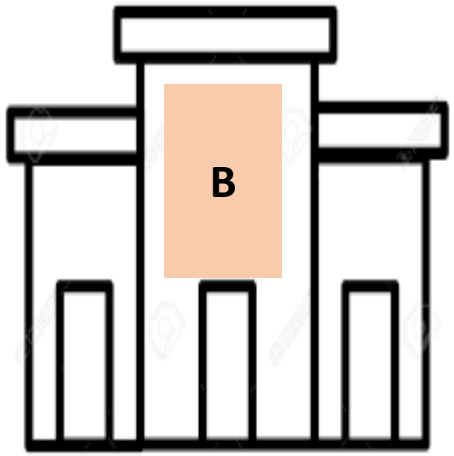
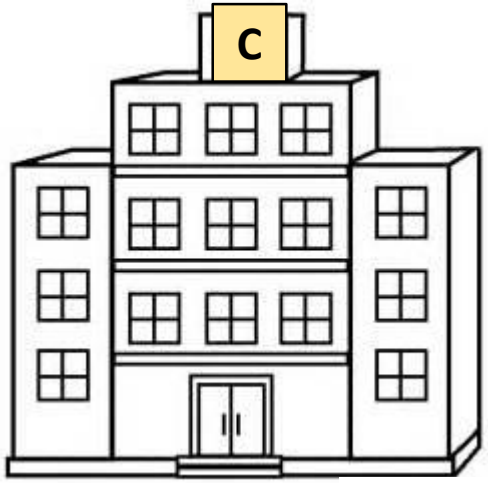
Your hospital, Hospital A, works with three other hospitals to figure out which medication works best.



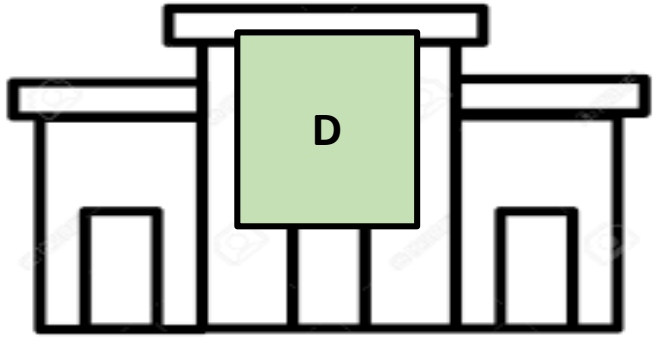
Hospital A



Hospital B



Hospital C



Hospital D

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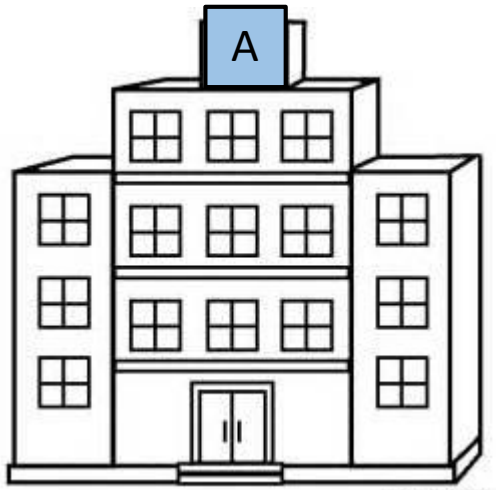
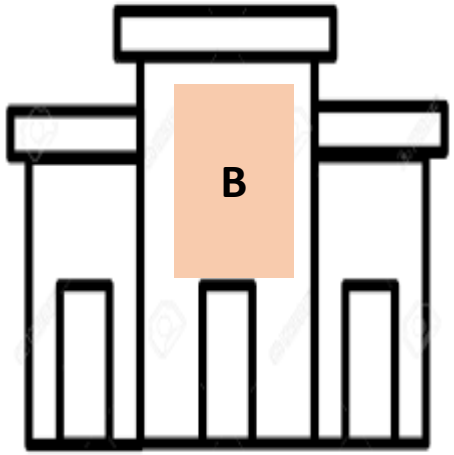
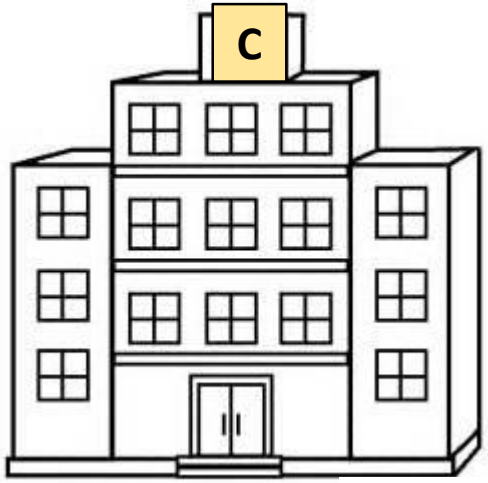
The four hospitals agree to be randomly assigned one of the two drugs being compared (DILAX or Relaxil) to use to treat to their patients with high blood pressure.



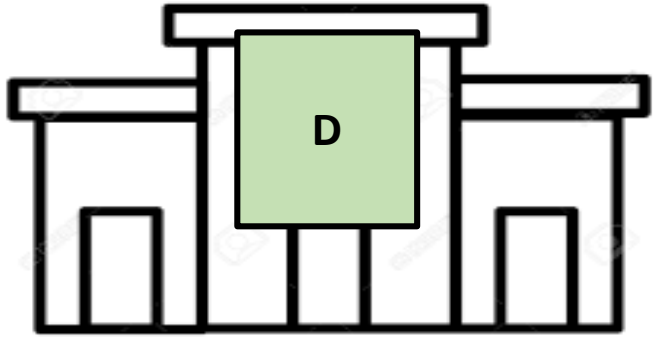
Hospital A



Hospital B



Hospital C



Hospital D

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Why do we mean when we say “randomly assigned”?

- Imagine a gumball machine. You put in a quarter, and a gumball comes out.
- You don’t get to choose the color of the gumball, because it’s decided by chance. You will randomly get a red gumball, a green gumball, or a blue gumball.
- One way to find out if one drugs works better is to randomly assign each hospital one of the two drugs. By chance, some hospitals will be assigned to get **DILAX** and others will be assigned **Relaxil**.
- This randomization ‘evens out’ any differences between the groups so that any differences in the results would be due to the drug.

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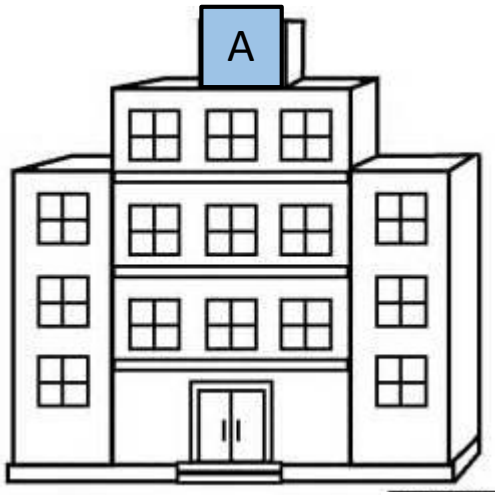
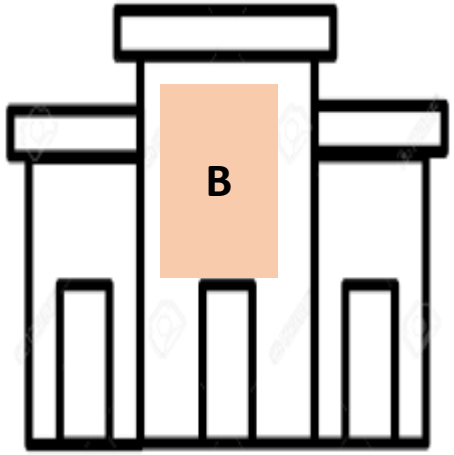
- By chance, some hospitals are assigned **DILAX** to treat their patients with high blood pressure, while others are assigned **Relaxil**.
- No matter which one medication they are get, the medication is one that is currently in use and is known to be safe and effective for treating high blood pressure.



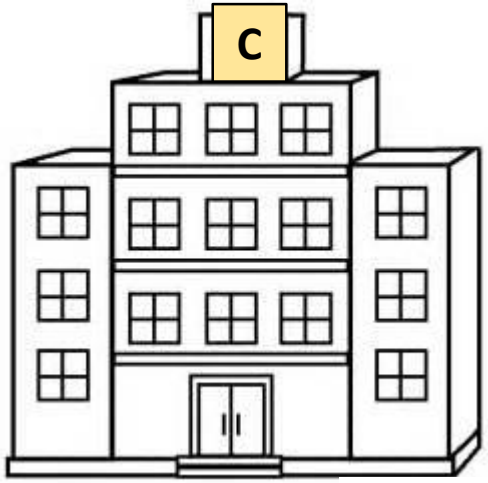
DILAX

Hospital A



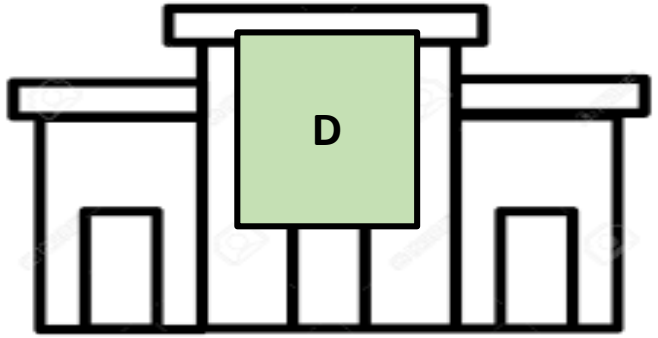
Relaxil

Hospital B



Relaxil

Hospital C



DILAX

Hospital D

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To answer the question, each hospital:

Runs a computer program to search their electronic health records (EHRs) to find those patients who have been diagnosed high blood pressure and have been prescribed either DILAX or Relaxil.

The computer programs collect the following information on each of their patients who have been diagnosed with high blood pressure and treated with one of the two medications:

- **List of medications they are taking**
- **Their blood pressure levels recorded at each of their clinical visits.**
- **Any side effects from the medication**

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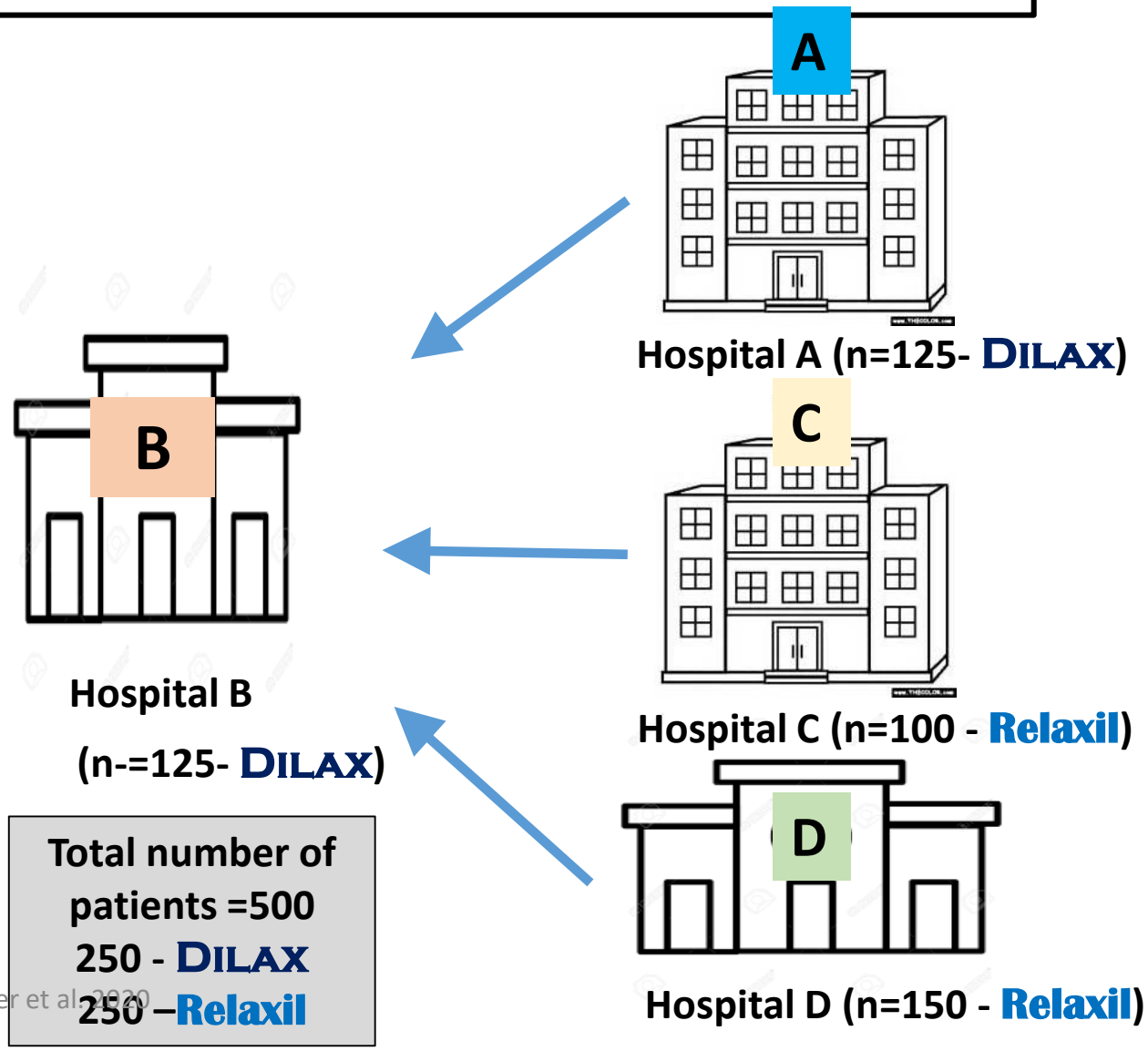
Each hospital shares their data with the team at Hospital B who will combine all the data and analyze it together.

A few important things to note:

- Before sharing their patient information with Hospital B, each hospital removes the names of their patients (along with any other identifying information) and replaces it with a code.
  - For example, John Smith becomes HABPP2 (Hospital A, blood pressure patient 2)
- Hospital B does not have access to any identifying information about the patients from the other hospitals.



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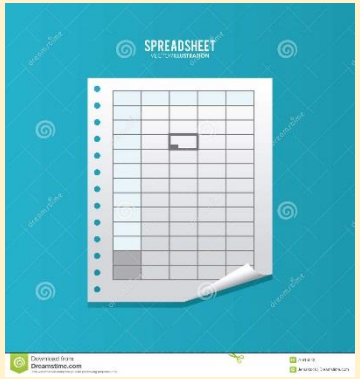
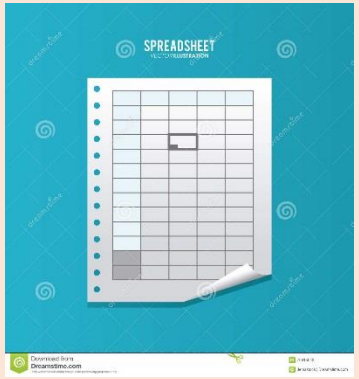
Now they can compare the blood pressure values between the two groups of patients

Patients prescribed DILAX (n=250)



Blood pressure values

Patients prescribed Relaxil (n=250)



Which works better - DILAX or Relaxil?

Bollinger et al. 2020

Questions for the group:

- ***What*** information would you want to know?
  - Medical implications
  - Other information
- ***How*** would you ***feel*** when you receive the information?
- ***How*** would you want to receive this information?
- ***Who*** do you think should return this information to you?