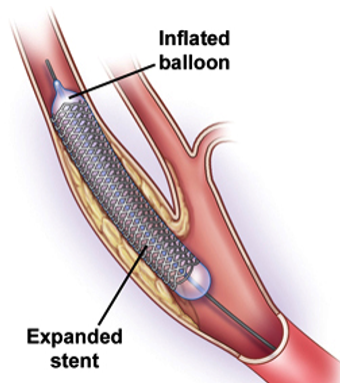# Lecture 1: Introduction and Case Study

Course Overview: What do we learn?

1. **Identify a question or problem of interest**

2. **Collect relevant data**

3. **Analyze the data**

4. **Form a conclusion**

Case Study: Do stents reduce the risk of stroke in at-risk patients?

Stents have been suggested as a tool for reducing the risk of stroke in certain at-risk patients. 451 patients agreed to participate in a study and were divided into two groups: **Control** (standard medical management) and **Treatment** (standard medical management + stent implanted). One year later, they were evaluated according to whether or not they had experienced a stroke.

Data for this study can be found in the Excel sheet `Stent365.xlsx`

Summary of stent study outcomes for 451 patients:

	Stroke	No Event
Treatment	28	199
Control	45	179

Thoughts?

The Big Question: Do we have enough information to conclude that stents decrease the risk of stroke in this type of patient?

Coin flip example:

Stent example:

We use statistical tools to determine if the difference is so large that we should reject the notion that it was due to chance.