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Hi. This tutorial covers the power of a hypothesis test. So let's consider the hypotheses for a possible test. I've simplified these hypotheses. So we would be testing for a parameter, but I've simplified them so that the null hypothesis would indicate that no cancer is present. And the alternative hypothesis would indicate that cancer is present.

So if we think about the implications of each type of error, a type I error would be that the test indicates cancer is present when the patient does not actually have cancer. And a type II error is the test indicates cancer is not present when the patient does actually have cancer. So obviously, these are both errors and neither of them-- we wouldn't want either of these two things to happen.

But I would say with a type I error, if you're indicating cancer is present when the patient does not actually have cancer, so in this case, the patient would probably be subjected to more tests, possibly some treatment like chemotherapy or something like that. So it would waste a lot of resources. It would also put unneeded stress on the patient.

But I would say in this case, a type II error would be worse. So if the test indicates that cancer is not present when they actually have cancer, obviously they're not going to be subjected to timely treatment they need. So I would say a type II error in this case would be a pretty bad mistake to make.

So let's define the power of a hypothesis test. It's the probability of not making a Type II error. So the power is a good-- something that's good. So we want the power of the hypothesis test to be pretty high. We're not going to calculate the power of the test here. But the power of the test is almost always calculated with technology. And like I said, we want the power to be high.

So there are two simple ways to increase the power of a test. So if we increase the level of significance, so that value of alpha, we're going to be able to reduce the-- or increase the power of the test.

Now, one thing, though, that can happen is that if you increase the level of significance, you're going to increase the risk of a type I error. So if we lower the probability of making a type II error, increasing the power, we're going to increase our risk of making a type I error.

And the second way is that you're going to increase the power of the test is just to use a larger sample. And a lot of times, this isn't necessarily going to be an option because of cost constrictions or time constraints, things like that. But know that using a larger sample will give you a higher power.

This has been the tutorial on the power of a hypothesis test. Thanks for watching.