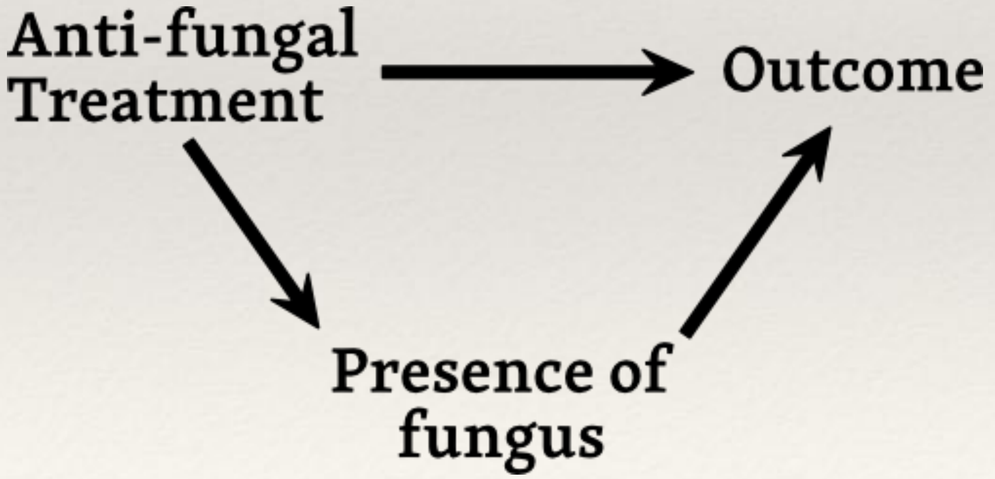
POST-TREATMENT VARIABLES

If we are evaluating the effectiveness of a fungal treatment, most of the effect of the treatment could be mediated by the presence of fungus. So, using presence of fungus in our model would mask the effect of the treatment.



CONDITIONING ON POSTTREATMENT VARIABLES

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How Conditioning on Posttreatment Variables Can Ruin Your Experiment and What to Do about It

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Abstract: *In principle, experiments offer a straightforward method for social scientists to accurately estimate causal effects. However, scholars often unwittingly distort treatment effect estimates by conditioning on variables that could be affected by their experimental manipulation. Typical examples include controlling for posttreatment variables in statistical models, eliminating observations based on posttreatment criteria, or subsetting the data based on posttreatment variables. Though these modeling choices are intended to address common problems encountered when conducting experiments, they can bias estimates of causal effects. Moreover, problems associated with conditioning on posttreatment variables remain largely unrecognized in the field, which we show frequently publishes experimental studies using these practices in our discipline's most prestigious journals. We demonstrate the severity of experimental posttreatment bias analytically and document the magnitude of the potential distortions it induces using visualizations and reanalyses of real-world data. We conclude by providing applied researchers with recommendations for best practice.*

Montgomery, J. M., Nyhan, B. & Torres, M. How conditioning on posttreatment variables can ruin your experiment and what to do about it. Am. J. Pol. Sci. **62**, *760–775 (2018)*