Bias is anything that interferes with the truth. When discussing Evidence-Based Medicine, bias is something that can weaken evidence in a clinical study.
There are many types of bias. The first three types on this list were discussed at length in the 2nd year Determinants of Health course. This module will briefly examine four other kinds of bias.
What eventually happened to everyone who was originally enrolled in a clinical trial? If there were drop-outs, how did these people leaving the trial before its completion determine the final outcomes? Were they included as “responders” or “non-responders”? Researchers should discuss this, often called “Intention to Treat” in the Methodology section of a paper.
A 2000 study in the Journal for Scientific Exploration (Scargle, *Journal of Scientific Exploration*, Vol. 14, No. 1, pp. 91–106, 2000) posited that up to 95% of research articles that did not show statistical significance were never published. This would mean that results from only 5% of research are being used to determine Evidence-Based outcomes. This slide represents an example of a study conducted here at U Mass many years ago. Because of the low P Value, possibly the time it would take to write and submit a paper on these results and maybe even the concern that it would be rejected by a publisher, caused this research to never be published.
Comparator Bias

Comparing new treatment to no treatment, rather than the current standard of care

- “Azithromycin is superior to placebo in the treatment of Acute Sinusitis.”
- That is nice, but is it superior to Amoxicillin or Bactrim? Don’t know; they didn’t do (or won’t publish) that study.

This is the tag line from an early add for a Z-Pack. Success against placebo is all a pharmaceutical house needs to prove in order to have a new drug approved by the FDA. But is Azithromycin superior to Amoxicillin or Bactrim, two generic antibiotics also used to treat sinusitis? They either didn’t do this study or if they did, did not publish the results.
How might an author have benefited from the results of a study? Look for disclosures, usually located at the bottom of or at the end of an article, indicating how the study was funded and any connections that this author may have with those funding agencies. For example, look at the JUPITER study, published in the New England Journal in December 2008. Methodologically, the research appears very sound. But look at the disclosures for the lead author. Does he have anything to gain from the clinical implementation of these findings? It doesn’t mean that the outcomes are fraudulent or flawed. But, a 2011 review or research evaluating thromboprophylaxis following knee replacement found unfavorable conclusions in only 3.8% of industry sponsored trials versus 21.4% if non industry sponsored trials (p = 0.033). The authors do not correlate these findings with flawed research. Instead, they suggest that confounders such as publication bias might be the issue. Bias; don’t look for it, always assume that it is present.