# Word for Word

## *Efficacy* or *efficiency*?

The words *efficacy* and *efficiency* look very similar, which often causes confusion in biomedical writing. Quite often, these two words are used incorrectly when describing treatment results in biomedical papers.

*Efficacy* is the ability to provide a certain effect (i.e., effectiveness).

**Examples:**

- The treatment's efficacy was demonstrated by the presence of fewer tumors in the study group than in the control group.
- The efficacy of the low-fat diet in reducing blood pressure decreased as BMI decreased.

*Efficiency* is how well something produces a certain effect without wasting resources. In other words, it's the ratio of useful results to the effort put into obtaining those results.

**Examples:**

- The efficiency of receiving radiation therapy and chemotherapy at separate facilities paled in comparison with that of receiving both types of treatment at a single clinic.
- In our lab, we found the efficiency of multitasking to be vastly superior to that of running one experiment at a time.

One way to differentiate *efficacy* and *efficiency* is to reword a sentence using different forms of these two words.

**Examples:**

- The low-fat diet was more efficacious/effective (not efficient) in reducing blood pressure in patients with high BMIs than in those with low BMIs.
- In our lab, multitasking was vastly more efficient (not efficacious/effective) than running one experiment at a time.

**Bibliography**

Merriam-Webster's Collegiate Dictionary, 11th ed. Springfield, MA: Merriam-Webster, 2003:397.

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—Don Norwood

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