

# Absolute Risk Reduction

Reported effects of a medical treatment are most directly expressed as **absolute risk reduction**.

In a controlled medical study, patients are assigned to one of two groups: **control group** (no treatment) or **treated group**. At the conclusion of the study, the adverse event rate (%) for the control group (CER) and adverse event rate (%) for the treated group (TER) are observed. The difference between the **CER** and the **TER** is the **absolute risk reduction (ARR)**. Reporting these three numbers - **CER, TER, ARR** - most directly communicates the treatment effect, allowing viewers to assess their risk of adverse event without treatment (CER), risk of adverse event with treatment (TER), and risk reduction conferred by treatment (ARR).

In publications and in advertisements, effects of a medical treatment are often expressed by performing an additional mathematical calculation: *dividing the absolute risk reduction (ARR) by the CER to generate a percentage of a percentage*, termed the relative risk reduction (**RRR**). The **RRR** is a **larger number** which communicates neither the **baseline risk** nor the **absolute risk reduction** conferred by treatment.

The **value of a medical treatment** is clearly communicated by reporting:

- 1) *adverse event rate (%) in the control group (CER)*,
- 2) *adverse event rate (%) in the treatment group (TER)*, and
- 3) *absolute risk reduction (%) conferred by treatment (ARR)*

With these three numbers, the reader can directly assess how individuals similar to those in the study will fare, in terms of risk of an adverse event without treatment and the benefit to be expected by treatment.