Supplemental Digital Content 1. Computing mean change in CD4 cell count from other data available

For studies that provided medians and interquartile range (or range) of change in CD4 cell count, we employed the median as the mean and then derived the standard deviations under the assumption of normal distribution. If the studies provided a p-value of the difference, we calculated the standard deviation for each arm under the T-distribution with an assumption of equal variances. Furthermore, for the studies that provided standard deviations of the baseline and follow-up mean CD4 cell counts, we computed the standard deviation of the mean change by assuming a correlation derived from a study with similar follow-up periods (R. Bosch, PhD, Center for Biostatistics in AIDS Research, Harvard School of Public Health, written communication, October 2008).

Risk ratio

$$RR_i = \frac{\dfrac{x_{1i}}{n_{1i}}}{\dfrac{x_{2i}}{n_{2i}}}$$

Standard error of the risk ratio

$$se(\ln(RR)_i) = \sqrt{\frac{1}{x_{1i}} - \frac{1}{n_{1i}} + \frac{1}{x_{2i}} - \frac{1}{n_{2i}}}$$

i = individual study ID
x = number experiencing the outcome (1 = intervention, 2 = control)
n = number in each arm (1 = intervention, 2 = control)

Difference in mean change in CD4 cell count

$$d_i = m_{1i} - m_{2i}$$

m = mean change in CD4 cell count in each arm (1 = intervention, 2 = control)

Standard error of difference in change in CD4

$$se(d_i) = \sqrt{\frac{SD_{1i}^2}{n_{1i}} + \frac{SD_{2i}^2}{n_{2i}}}$$

n = number of observations in each arm (1 = intervention, 2 = control)
SD = standard deviation for the mean change in CD4 cell count

Estimating the mean and standard deviation of CD4 cell count (or change in CD4 cell count) given median values and interquartile range or range

Mean change = median change

SD = (interquartile range)/1.35
SD = range / 4 for 15<n≤53[1]

Estimating the mean and standard deviation of *change* in CD4 cell count given baseline and follow-up mean and standard deviation values
Mean change = m_f - m_b

$$SD = \sqrt{SD_b^2 + SD_f^2 - 2(\text{cov}_{bf})}$$

$$\text{cov}_{bf} = \rho_{bf}\sqrt{\text{var}(m_b)\,\text{var}(m_f)}$$

b = baseline
f = follow-up
ρ = correlation of CD4 cell count from baseline to a follow-up
(R. Bosch, PhD, Center for Biostatistics in AIDS Research, Harvard School of Public Health, written communication, October 2008).

References

1.   Hozo SP, Djulbegovic B, Hozo I. Estimating the mean and variance from the median, range, and the size of a sample. *BMC medical research methodology.* 2005;5(1):13.