	Outcome Present	Outcome Absent	
Treated/ Exposed (Y)	<b>a</b> Outcome present in treated patient	<b>b</b> Outcome absent in treated patient	<u>Y= Risk of</u> <u>Outcome in</u> <u>Treated Group</u> = a/(a+b)
Control / Not exposed (X)	<b>c</b> Outcome present in control patient	<b>d</b> Outcome absent in control patient	X= Risk of Outcome in Control Group = c/(c+d)

# I. Relative Risk

The ratio of risk of outcome in treated group (Y) as compared with control group (X) RR=Y/X = a/(a+b) / c (c+ d)

This always tells us whether the observed outcome (effect) occurs more or less often in the exposed group than in the unexposed group. Calculations for RR are identical whether you are asking a question about therapy or a question about Harm. Relative Risk can only be calculated from RCTs or cohort studies where we can determine outcomes of interest in exposed / treated groups and unexposed / control groups. (Note: for case control studies, the numbers of cases and controls and therefore the proportion of individuals with the outcome is chosen by the investigator- for case control studies we use odds ratios: Odds Ratio = (a/c) / (b/d)

## II. Relative Risk Reduction

The percent reduction is percent decrease in risk in the treated group (Y) as compared with control group (X) (X)

For Questions of Harm: You calculate the Relative Risk Increase: The calculation is exactly the same as for Treatment, however, you will have an increase in relative risk.

## III. Absolute Risk Reduction

The difference in risk between the control group (X) and the treated group (Y). The risk is higher in the control group, therefore the you subtract

## ARR = X (Control) -Y (Treated)

For Questions of Harm: You calculate the Absolute Risk Increase. Because the risk is higher in the treated group, the ARI= Y(Treated)- X (Control)

## IV. Number Needed to Treat

NNT is the reciprocal of the ARR **NNT = 1/ARR = 1/(X-Y)** (an NNT of 20 means that 20 patients must be treated to prevent one adverse outcome)

For Questions of Harm: You calculate the Number Needed to Harm: The calculation is exactly the same as for Treatment, however, you will take the reciprocal of Absolute Risk Increase: NH=1/ARI = 1/(X-Y) (a NNH of 20 means that for every 20 patients treated, we will cause one adverse outcome)