**Number Needed to Treat (NNT)**

As we have seen, absolute risk reduction (ARR) is the difference in risks between an exposed (or treated) and an unexposed (or control) group.

In a treatment study, the treated group has fewer outcomes (readmission) than the control group. The absolute risk in the control group (ARc) is 15/100. The absolute risk in the treated group (ARu) is 5/100. ARR = ARc - ARt = 10/100 = 0.10 or 10%.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Outcome + | Outcome – | Total |
| Treated | 5 | 95 | 100 |
| Control | 15 | 85 | 100 |

The number needed to treat (NNT) is the number that would need to be moved to the treatment group to avoid one additional readmission. NNT = 1/ARR = 1/0.10 = 10.

This is true because if those 10 patients were left in the control group, 15% of them (1.5 patients) would be readmitted. If those 10 patients were moved to the treatment group. 5% of them (0.5 patients) would be admitted. That difference in outcomes (1.5 – 0.5 = 1 patient) is equivalent to the number needed to treat (to avoid one fewer outcome).

There is not one cutoff number for a favorable NNT. NNT depends on outcome avoided (death should be avoided more than readmission), cost of the intervention and adverse effects of treatment and their severity. The difference in an adverse effect between the treatment and control groups can be used to calculate number needed to harm (NNH).