

Using Risk Statistics in Relative Rather Than Absolute Terms Can Make Treatment Effects Seem Larger Than They Truly Are

Using risk statistics in relative rather than absolute terms can make treatment effects seem larger than they truly are, leading to potential misinterpretations in medical research and health decision-making. This phenomenon occurs because the way we present risk data significantly influences our perception of a treatment's effectiveness. When risk differences are expressed in relative terms, such as relative risk reduction, they often appear more impressive than the actual, or absolute, risk reductions. Understanding the distinction between these two types of measures is crucial for clinicians, researchers, and patients to make informed choices based on accurate interpretations of data.

Understanding Relative and Absolute Risk: The Foundations

What Are Relative Risks?

Relative risk (RR) compares the probability of an event occurring in the treatment group to that in the control group. It is calculated as:

$$[\text{Relative Risk (RR)} = \frac{\text{Risk in Treatment Group}}{\text{Risk in Control Group}}]$$

For example, if a new drug reduces the risk of a disease from 4% to 2%, the relative risk reduction is:

$$[RR = \frac{2\%}{4\%} = 0.5]$$

This suggests that the treatment halves the risk compared to no treatment, which sounds highly effective.

What Are Absolute Risks?

Absolute risk, on the other hand, measures the actual difference in risk between two groups. It is calculated as:

$$[\text{Absolute Risk Difference (ARD)} = \text{Risk in Control} - \text{Risk in Treatment}]$$

Using the same example:

$$[ARD = 4\% - 2\% = 2\%]$$

This indicates that 2 out of 100 people benefit from the treatment, providing a clearer picture of the actual benefit.

The Pitfalls of Relying Solely on Relative Risk Statistics

Overestimating Treatment Benefits

Using relative risk can make a treatment seem more effective than it actually is in real-world terms. For instance, a 50% reduction sounds impressive, but if the baseline risk is very low, the actual benefit might be minimal. This overestimation can influence clinicians to favor certain treatments or sway patients to opt for interventions that may offer limited real-world benefit.

The Impact on Patient Decision-Making

Patients often interpret risk information presented in relative terms without understanding the underlying baseline risks. For example, hearing that a drug reduces risk by 50% may lead patients to perceive a substantial

BENEFIT, EVEN IF THE ABSOLUTE RISK REDUCTION IS ONLY 1%. THIS MISPERCEPTION CAN LEAD TO OVERDIAGNOSIS, OVERTREATMENT, OR UNNECESSARY ANXIETY.

THE ROLE IN POLICY AND GUIDELINES

HEALTH POLICYMAKERS AND GUIDELINE DEVELOPERS MAY FAVOR RELATIVE RISK METRICS BECAUSE THEY HIGHLIGHT THE POTENTIAL EFFECTIVENESS OF INTERVENTIONS. HOWEVER, THIS CAN RESULT IN RESOURCE ALLOCATION DECISIONS BASED ON OVERESTIMATED BENEFITS, EMPHASIZING THE IMPORTANCE OF CONSIDERING ABSOLUTE RISK MEASURES FOR BALANCED HEALTHCARE PLANNING.

ILLUSTRATIVE EXAMPLES DEMONSTRATING THE DIFFERENCE

EXAMPLE 1: CARDIOVASCULAR INTERVENTION

SUPPOSE IN A CLINICAL TRIAL:

- 10 OUT OF 1,000 PATIENTS IN THE CONTROL GROUP EXPERIENCE A HEART ATTACK.
- 5 OUT OF 1,000 PATIENTS IN THE TREATMENT GROUP EXPERIENCE A HEART ATTACK.

RELATIVE RISK:

$$\left[RR = \frac{0.5\%}{1\%} = 0.5 \right]$$

RELATIVE RISK REDUCTION:

$$\left[1 - RR = 50\% \right]$$

ABSOLUTE RISK DIFFERENCE:

$$\left[1\% - 0.5\% = 0.5\% \right]$$

NUMBER NEEDED TO TREAT (NNT):

$$\left[NNT = \frac{1}{ARD} = \frac{1}{0.005} = 200 \right]$$

THIS MEANS 200 PATIENTS NEED TO BE TREATED TO PREVENT ONE HEART ATTACK, DESPITE THE IMPRESSIVE 50% RELATIVE RISK REDUCTION.

EXAMPLE 2: CANCER SCREENING

IMAGINE A SCREENING TEST THAT REDUCES THE RISK OF DEATH FROM A CERTAIN CANCER FROM 2% TO 1%.

- RELATIVE RISK REDUCTION:

$$\left[RR = \frac{1\%}{2\%} = 0.5 \quad \rightarrow \quad 50\% \right]$$

- ABSOLUTE RISK REDUCTION:

$$\left[2\% - 1\% = 1\% \right]$$

- NUMBER NEEDED TO SCREEN (NNS):

$$\left[NNS = \frac{1}{0.01} = 100 \right]$$

WHILE THE RELATIVE RISK REDUCTION APPEARS SUBSTANTIAL, THE ABSOLUTE BENEFIT IS MODEST, HIGHLIGHTING THE IMPORTANCE OF CONSIDERING BOTH MEASURES.

WHY RELATIVE RISKS CAN BE MISLEADING

THE INFLUENCE OF BASELINE RISKS

THE MAGNITUDE OF RELATIVE RISK REDUCTIONS CAN BE HEAVILY INFLUENCED BY BASELINE RISKS. WHEN BASELINE RISKS ARE LOW, EVEN LARGE RELATIVE REDUCTIONS MAY TRANSLATE INTO SMALL ABSOLUTE BENEFITS. CONVERSELY, IN POPULATIONS WITH HIGH BASELINE RISKS, SMALL RELATIVE RISK REDUCTIONS CAN LEAD TO SIGNIFICANT ABSOLUTE BENEFITS.

THE "LURE" OF IMPRESSIVE STATISTICS

MEDIA REPORTS AND PROMOTIONAL MATERIALS OFTEN EMPHASIZE RELATIVE RISK REDUCTIONS BECAUSE THEY SOUND MORE COMPELLING. THIS CAN LEAD TO INFLATED PERCEPTIONS OF A TREATMENT'S TRUE EFFECTIVENESS AND INFLUENCE PATIENT CHOICES AND POLICY DECISIONS.

THE RISK OF OVERINTERPRETATION

CLINICIANS MAY OVERSTATE THE BENEFITS OF A TREATMENT IF THEY FOCUS SOLELY ON RELATIVE RISK FIGURES WITHOUT CONSIDERING THE ABSOLUTE RISK REDUCTION. THIS CAN RESULT IN UNNECESSARY TREATMENTS AND ASSOCIATED RISKS OR COSTS.

HOW TO PROPERLY INTERPRET AND COMMUNICATE RISK

EMPHASIZING ABSOLUTE RISKS

HEALTHCARE PROVIDERS SHOULD PRESENT BOTH RELATIVE AND ABSOLUTE RISK MEASURES TO PROVIDE A BALANCED VIEW. FOR EXAMPLE:

- "THIS MEDICATION REDUCES THE RISK OF STROKE FROM 4% TO 2%, WHICH IS AN ABSOLUTE REDUCTION OF 2%. THIS MEANS THAT OUT OF 100 PEOPLE TREATED, 2 FEWER WILL EXPERIENCE A STROKE."

USING NUMBER NEEDED TO TREAT (NNT)

THE NNT OFFERS A STRAIGHTFORWARD WAY TO UNDERSTAND THE REAL-WORLD IMPACT OF A TREATMENT:

- LOWER NNT INDICATES MORE EFFECTIVE TREATMENT.
- IT HELPS PATIENTS AND CLINICIANS WEIGH BENEFITS AGAINST POTENTIAL RISKS OR COSTS.

VISUAL AIDS AND CLEAR COMMUNICATION

GRAPHS, ICON ARRAYS, AND PLAIN LANGUAGE EXPLANATIONS CAN IMPROVE UNDERSTANDING OF HOW RISKS TRANSLATE INTO REAL-WORLD BENEFITS.

THE IMPORTANCE OF CONTEXT IN DECISION-MAKING

BALANCING RISKS AND BENEFITS

DECISIONS ABOUT TREATMENTS SHOULD CONSIDER BOTH THE RELATIVE AND ABSOLUTE EFFECTS, ALONGSIDE PATIENT PREFERENCES, COSTS, AND POTENTIAL HARMS.

PERSONALIZING RISK ASSESSMENTS

INDIVIDUAL BASELINE RISKS VARY; UNDERSTANDING PERSONAL RISK PROFILES ALLOWS FOR MORE ACCURATE INTERPRETATION OF TREATMENT EFFECTS.

CRITICAL APPRAISAL OF RESEARCH

CLINICIANS AND PATIENTS SHOULD SCRUTINIZE THE REPORTED STATISTICS, ASKING:

- WHAT IS THE BASELINE RISK?
- ARE THE REPORTED BENEFITS MEANINGFUL IN ABSOLUTE TERMS?
- HOW DO THESE BENEFITS COMPARE TO POTENTIAL HARMS OR COSTS?

CONCLUSION

THE WAY RISK STATISTICS ARE PRESENTED—WHETHER IN RELATIVE OR ABSOLUTE TERMS—PROFOUNDLY INFLUENCES THE PERCEPTION OF A TREATMENT'S EFFECTIVENESS. WHILE RELATIVE RISK REDUCTIONS CAN MAKE INTERVENTIONS APPEAR HIGHLY BENEFICIAL, THEY CAN ALSO BE MISLEADING IF NOT CONTEXTUALIZED WITH ABSOLUTE RISK MEASURES. FOR ACCURATE DECISION-MAKING, IT IS ESSENTIAL TO CONSIDER BOTH TYPES OF STATISTICS AND UNDERSTAND THEIR IMPLICATIONS. HEALTHCARE PROFESSIONALS AND PATIENTS ALIKE SHOULD ADVOCATE FOR TRANSPARENT COMMUNICATION THAT EMPHASIZES ABSOLUTE BENEFITS, THEREBY ENABLING MORE INFORMED, BALANCED CHOICES THAT TRULY REFLECT THE REAL-WORLD IMPACT OF MEDICAL INTERVENTIONS.

FREQUENTLY ASKED QUESTIONS

WHAT IS THE MAIN ISSUE WITH PRESENTING RISK STATISTICS IN RELATIVE TERMS?

PRESENTING RISK STATISTICS IN RELATIVE TERMS CAN EXAGGERATE THE PERCEIVED TREATMENT EFFECT, MAKING IT SEEM LARGER THAN IT ACTUALLY IS IN ABSOLUTE TERMS.

HOW DO RELATIVE RISK REDUCTIONS DIFFER FROM ABSOLUTE RISK REDUCTIONS IN CLINICAL STUDIES?

RELATIVE RISK REDUCTIONS COMPARE THE PROPORTIONAL DECREASE IN RISK BETWEEN GROUPS, WHILE ABSOLUTE RISK REDUCTIONS SHOW THE ACTUAL DIFFERENCE IN EVENT RATES, OFTEN PROVIDING A MORE ACCURATE MEASURE OF TREATMENT IMPACT.

WHY CAN RELATIVE RISK STATISTICS BE MISLEADING FOR PATIENTS AND CLINICIANS?

BECAUSE THEY CAN OVERSTATE THE SIGNIFICANCE OF BENEFITS OR HARMS, LEADING TO MISINFORMED DECISIONS BASED ON PERCEIVED LARGER EFFECTS THAT MAY NOT TRANSLATE INTO MEANINGFUL CLINICAL OUTCOMES.

WHAT IS AN EXAMPLE OF HOW RELATIVE RISK CAN MAKE A TREATMENT SEEM MORE EFFECTIVE THAN IT IS?

IF A TREATMENT REDUCES THE RISK FROM 2% TO 1%, THE RELATIVE RISK REDUCTION IS 50%, BUT THE ABSOLUTE RISK REDUCTION IS ONLY 1%, WHICH IS LESS IMPRESSIVE AND MORE INFORMATIVE FOR DECISION-MAKING.

HOW CAN RESEARCHERS AND CLINICIANS ENSURE THEY COMMUNICATE RISKS EFFECTIVELY?

BY PRESENTING BOTH ABSOLUTE AND RELATIVE RISK STATISTICS, EMPHASIZING THE ACTUAL DIFFERENCE IN RISK, AND EXPLAINING WHAT THESE FIGURES MEAN IN REAL-WORLD TERMS.

WHAT ROLE DOES BASELINE RISK PLAY IN INTERPRETING RELATIVE RISK STATISTICS?

BASELINE RISK INFLUENCES HOW SIGNIFICANT A RELATIVE RISK REDUCTION APPEARS; A LARGE RELATIVE REDUCTION CAN CORRESPOND TO A SMALL ABSOLUTE BENEFIT IF THE BASELINE RISK IS LOW.

ARE RELATIVE RISK STATISTICS USEFUL IN CLINICAL DECISION-MAKING?

YES, BUT THEY SHOULD BE INTERPRETED ALONGSIDE ABSOLUTE RISK MEASURES TO PROVIDE A BALANCED UNDERSTANDING OF TREATMENT EFFECTS.

WHAT IS THE KEY TAKEAWAY REGARDING THE PRESENTATION OF TREATMENT EFFECTS IN RESEARCH STUDIES?

PRESENTING BOTH ABSOLUTE AND RELATIVE RISK STATISTICS HELPS PREVENT OVERESTIMATION OF BENEFITS AND SUPPORTS MORE INFORMED, BALANCED CLINICAL DECISIONS.

ADDITIONAL RESOURCES

TING RISK STATISTICS IN RELATIVE RATHER THAN ABSOLUTE TERMS CAN MAKE TREATMENT EFFECTS SEEM LARGER THAN

IN THE REALM OF MEDICAL RESEARCH AND STATISTICAL ANALYSIS, UNDERSTANDING HOW RISK STATISTICS ARE PRESENTED CAN SIGNIFICANTLY INFLUENCE PERCEPTIONS OF TREATMENT EFFICACY. WHEN TING RISK STATISTICS IN RELATIVE RATHER THAN ABSOLUTE TERMS CAN MAKE TREATMENT EFFECTS SEEM LARGER THAN THEY TRULY ARE, IT UNDERSCORES THE IMPORTANCE OF CONTEXT AND CLARITY IN DATA INTERPRETATION. THIS PHENOMENON OFTEN LEADS PATIENTS, CLINICIANS, AND POLICYMAKERS TO OVERESTIMATE THE BENEFITS OR UNDERESTIMATE THE HARMS OF INTERVENTIONS, POTENTIALLY IMPACTING DECISION-MAKING PROCESSES AND HEALTHCARE OUTCOMES.

INTRODUCTION: THE POWER OF RISK COMMUNICATION

EFFECTIVE COMMUNICATION OF RISKS IS CENTRAL TO EVIDENCE-BASED MEDICINE. WHETHER DISCUSSING THE BENEFITS OF A NEW DRUG, THE DANGERS OF A LIFESTYLE CHOICE, OR THE SAFETY OF A PROCEDURE, HOW DATA IS FRAMED CAN SHAPE PERCEPTIONS PROFOUNDLY. A COMMON PITFALL IS THE RELIANCE ON RELATIVE RISK REDUCTIONS (RRR) WITHOUT ADEQUATELY CONSIDERING ABSOLUTE RISK REDUCTIONS (ARR). WHILE RELATIVE MEASURES CAN APPEAR IMPRESSIVE, THEY MAY OBSCURE THE REAL-WORLD SIGNIFICANCE OF FINDINGS, LEADING TO MISCONCEPTIONS ABOUT TREATMENT EFFECTS.

UNDERSTANDING ABSOLUTE VS. RELATIVE RISK

WHAT ARE ABSOLUTE RISKS?

ABSOLUTE RISK REFERS TO THE ACTUAL CHANCE OF AN EVENT OCCURRING IN A GIVEN POPULATION OVER A SPECIFIED PERIOD. IT IS EXPRESSED AS A PERCENTAGE OR A PROBABILITY—FOR EXAMPLE, "5 OUT OF 1,000 PEOPLE WILL DEVELOP A CONDITION."

WHAT ARE RELATIVE RISKS?

RELATIVE RISK COMPARES THE RISK BETWEEN TWO GROUPS—TYPICALLY, AN INTERVENTION GROUP VERSUS A CONTROL GROUP. IT IS EXPRESSED AS A RATIO OR PERCENTAGE INCREASE/DECREASE RELATIVE TO THE BASELINE RISK. FOR INSTANCE, "THE TREATMENT REDUCES THE RISK BY 50%."

KEY DIFFERENCES

- ABSOLUTE RISK PROVIDES A STRAIGHTFORWARD ESTIMATE OF RISK MAGNITUDE.
- RELATIVE RISK SHOWS THE PROPORTIONAL CHANGE, WHICH CAN EXAGGERATE PERCEIVED BENEFITS OR HARMS WHEN THE

BASELINE RISK IS LOW.

WHY RELATIVE RISK CAN BE DECEPTIVE

THE ILLUSION OF MAGNITUDE

WHEN TREATMENT EFFECTS ARE PRESENTED SOLELY OR PRIMARILY AS RELATIVE RISK REDUCTIONS, THEY CAN MAKE THE INTERVENTION SEEM MORE EFFECTIVE THAN IT ACTUALLY IS. FOR EXAMPLE, REDUCING A RISK FROM 2% TO 1% IS A 50% RELATIVE REDUCTION BUT ONLY A 1% ABSOLUTE REDUCTION. THE DISPARITY BETWEEN THESE MEASURES CAN LEAD TO INFLATED PERCEPTIONS.

IMPACT ON PATIENTS AND CLINICIANS

- PATIENTS MAY OVERESTIMATE THE BENEFITS, LEADING TO UNREALISTIC EXPECTATIONS.
- CLINICIANS MIGHT FAVOR INTERVENTIONS BASED ON IMPRESSIVE RELATIVE FIGURES RATHER THAN ACTUAL BENEFIT MAGNITUDE.
- POLICYMAKERS COULD ALLOCATE RESOURCES BASED ON SEEMINGLY LARGE EFFECT SIZES, WHICH MAY NOT TRANSLATE INTO SUBSTANTIAL HEALTH GAINS.

EXAMPLE SCENARIO

SUPPOSE A NEW DRUG REDUCES THE RISK OF A CERTAIN DISEASE FROM 4 PER 1,000 TO 2 PER 1,000:

- RELATIVE RISK REDUCTION: 50%
- ABSOLUTE RISK REDUCTION: 2 PER 1,000 (0.2%)

WHILE THE RELATIVE FIGURE IS STRIKING, THE ABSOLUTE BENEFIT IS MODEST, HIGHLIGHTING THE IMPORTANCE OF CONTEXT.

THE STATISTICAL UNDERPINNINGS: HOW RELATIVE RISK OVERSTATES EFFECTS

THE ROLE OF BASELINE RISK

THE MAGNITUDE OF THE RELATIVE RISK IS HEAVILY INFLUENCED BY THE BASELINE RISK:

- WHEN BASELINE RISKS ARE LOW, EVEN A SMALL ABSOLUTE CHANGE CAN TRANSLATE INTO A LARGE RELATIVE CHANGE.
- CONVERSELY, IN HIGH-RISK POPULATIONS, THE SAME ABSOLUTE CHANGE RESULTS IN A SMALLER RELATIVE RISK DIFFERENCE.

THE MATHEMATICAL RELATIONSHIP

- RELATIVE RISK (RR) = RISK IN TREATMENT GROUP / RISK IN CONTROL GROUP
- ABSOLUTE RISK REDUCTION (ARR) = RISK IN CONTROL GROUP - RISK IN TREATMENT GROUP

THE KEY POINT: A SMALL ABSOLUTE DIFFERENCE CAN PRODUCE A LARGE RELATIVE DIFFERENCE IF THE BASELINE RISK IS LOW, LEADING TO OVERESTIMATION OF TREATMENT EFFECT.

HOW TO PROPERLY INTERPRET RISK STATISTICS

INCORPORATE BOTH MEASURES

ALWAYS CONSIDER BOTH RELATIVE AND ABSOLUTE MEASURES WHEN EVALUATING TREATMENT EFFECTS:

- RELATIVE RISK: HIGHLIGHTS PROPORTIONAL CHANGE.
- ABSOLUTE RISK: PROVIDES PRACTICAL SIGNIFICANCE.

USE NUMBER NEEDED TO TREAT (NNT)

NNT INDICATES HOW MANY PATIENTS NEED TO BE TREATED TO PREVENT ONE ADVERSE EVENT:

$$\text{NNT} = 1 / \text{ARR}$$

A LOWER NNT INDICATES A MORE EFFECTIVE INTERVENTION. FOR EXAMPLE, AN ARR OF 0.2% YIELDS AN NNT OF 500, SUGGESTING THAT MANY PATIENTS NEED TREATMENT TO PREVENT A SINGLE EVENT.

CONTEXTUALIZE THE DATA

UNDERSTAND THE BASELINE RISK IN THE POPULATION:

- IS THE RISK NATURALLY LOW OR HIGH?
- HOW DOES THE POPULATION STUDIED COMPARE TO YOUR PATIENT POPULATION?

REVIEW CONFIDENCE INTERVALS

ASSESS THE STATISTICAL PRECISION OF THE ESTIMATES. WIDE CONFIDENCE INTERVALS CAN MEAN UNCERTAINTY ABOUT THE TRUE EFFECT SIZE.

PRACTICAL EXAMPLES OF MISINTERPRETATION

EXAMPLE 1: SCREENING TESTS

A SCREENING TEST REDUCES THE RELATIVE RISK OF DEATH FROM A DISEASE BY 30%. HOWEVER, IF THE BASELINE RISK OF DEATH IS 0.5%, THE ABSOLUTE RISK REDUCTION IS ONLY 0.15%. PATIENTS MIGHT PERCEIVE THE BENEFIT AS MORE SUBSTANTIAL THAN IT IS, LEADING TO OVERUSE OR RELIANCE ON SCREENING.

EXAMPLE 2: VACCINATION EFFICACY

A VACCINE REDUCES THE RELATIVE RISK OF INFECTION BY 70%. IF THE BASELINE RISK OF INFECTION IS 1%, THE ABSOLUTE RISK REDUCTION IS 0.7%. THE HIGH RELATIVE RISK REDUCTION MIGHT OVERSHADOW THE MODEST ABSOLUTE BENEFIT, INFLUENCING VACCINATION DECISIONS.

STRATEGIES TO PROMOTE ACCURATE RISK COMMUNICATION

EDUCATION AND AWARENESS

- CLINICIANS SHOULD BE TRAINED TO PRESENT BOTH RELATIVE AND ABSOLUTE RISKS.
- PATIENTS SHOULD BE EMPOWERED WITH UNDERSTANDING OF THESE MEASURES.

USE VISUAL AIDS

GRAPHS, ICON ARRAYS, AND INFOGRAPHICS CAN HELP ILLUSTRATE ABSOLUTE RISKS CLEARLY.

STANDARDIZE REPORTING

JOURNALS AND ORGANIZATIONS SHOULD PROMOTE GUIDELINES THAT REQUIRE THE REPORTING OF BOTH RISK MEASURES AND NNT.

EMPHASIZE CLINICAL CONTEXT

COMMUNICATE HOW THE DATA APPLIES TO INDIVIDUAL PATIENTS, CONSIDERING THEIR SPECIFIC RISK PROFILES.

CONCLUSION: STRIKING A BALANCE IN RISK REPORTING

TING RISK STATISTICS IN RELATIVE RATHER THAN ABSOLUTE TERMS CAN MAKE TREATMENT EFFECTS SEEM LARGER THAN THEY TRULY ARE, WHICH CAN LEAD TO MISINFORMED DECISIONS AND OVERESTIMATION OF INTERVENTION BENEFITS. RECOGNIZING THE DIFFERENCE BETWEEN RELATIVE AND ABSOLUTE RISK, UNDERSTANDING THE INFLUENCE OF BASELINE RISK, AND EMPLOYING COMPREHENSIVE COMMUNICATION STRATEGIES ARE ESSENTIAL FOR ACCURATE INTERPRETATION. BY ADOPTING THESE PRACTICES, CLINICIANS, RESEARCHERS, AND PATIENTS CAN MAKE BETTER-INFORMED CHOICES ROOTED IN A CLEAR UNDERSTANDING OF THE TRUE MAGNITUDE OF TREATMENT EFFECTS, ULTIMATELY LEADING TO IMPROVED HEALTH OUTCOMES AND MORE RATIONAL HEALTHCARE UTILIZATION.

FINAL TAKEAWAYS

- ALWAYS SEEK BOTH RELATIVE AND ABSOLUTE RISK DATA.
- UNDERSTAND THE BASELINE RISK BEFORE INTERPRETING TREATMENT EFFECTS.
- USE NNT AS A PRACTICAL MEASURE OF BENEFIT.
- BE CAUTIOUS OF SENSATIONALIZED STATISTICS THAT MAY EXAGGERATE BENEFITS.
- PROMOTE TRANSPARENT AND BALANCED RISK COMMUNICATION IN CLINICAL PRACTICE AND RESEARCH.

BY PAYING CLOSE ATTENTION TO HOW RISK STATISTICS ARE FRAMED, WE ENSURE THAT TREATMENT DECISIONS ARE BASED ON AN ACCURATE APPRECIATION OF THEIR TRUE BENEFITS AND HARMS, FOSTERING MORE EFFECTIVE, ETHICAL, AND PATIENT-CENTERED HEALTHCARE.

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