

Slide 1: The Right Tool is What They Need, Not What We Have: A Taxonomy of Appropriate Levels of Precision in Patient Risk Communication

Brian J. Zikmund-Fisher, Ph.D.
Assistant Professor, Health Behavior & Health Education
University of Michigan School of Public Health, Ann Arbor, MI

Slide 2: Imagine Robert

- Goes to an online risk calculator:
 - “Calculate Your Heart Disease Risk Score!”
- Enters risk factor info:
 - BP, weight, height, cholesterol, etc.
- Gets result:
 - Your 10-year risk of cardiovascular disease is: 14.52%

Slide 3: Robert’s Tale

“So, I used this calculator, and it told me what my risk is.

But, I’m still confused.

Am I at high risk or not?”

Slide 4: Question

Is Robert “informed” about his cardiovascular risk?

Slide 5: Problems

- Excess precision
 - Excess decimal places undermine trust and comprehension of risk calculator outputs¹
- Unmet information needs

Slide 6: How Can Risk Information Be Over- or Under-Informative?

- Risk statements vary in the types of information they provide
 - Thus, a statement can be “accurate,” yet “uninformative”
- To clarify, I present a taxonomy of risk concepts

Slide 7: A Taxonomy of Risk Concepts

table with 3 columns: “Risk Concept,” “Sample Cognition and “Distinguishable From.” The latter two columns are empty.

Risk Concept:

Source: Eisenberg Center Conference Series 2011, Differing Levels of Clinical Evidence: Exploring Communication Challenges in Shared Decisionmaking Effective Health Care Program Web site

<http://www.effectivehealthcare.ahrq.gov/index.cfm>

- Possibility
- Relative Possibility
- Comparative Possibility
- Categorical Possibility
- Relative Probability
- Absolute Probability
- Comparative Probability
- Incremental Probability

Slide 8: A Taxonomy of Risk Concepts (2)

table with 3 columns: “Risk Concept,” “Sample Cognition and “Distinguishable From.”

Risk Concept:

- Possibility
- Relative Possibility
- Comparative Possibility
- Categorical Possibility
- Relative Probability
- Absolute Probability
- Comparative Probability
- Incremental Probability

Sample Cognition:

- Might happen, might not
- Higher chance
- This is more likely than that
- High chance

Distinguishable From:

- Will/Won't
- Lower/Equal
- They are equally likely
- Normal/Average

Slide 9: A Taxonomy of Risk Concepts (3)

table with 3 columns: “Risk Concept,” “Sample Cognition and “Distinguishable From.”

Risk Concept:

- Possibility

Source: Eisenberg Center Conference Series 2011, Differing Levels of Clinical Evidence: Exploring Communication Challenges in Shared Decisionmaking Effective Health Care Program Web site

<http://www.effectivehealthcare.ahrq.gov/index.cfm>

- Relative Possibility
- Comparative Possibility
- Categorical Possibility
- Relative Probability
- Absolute Probability
- Comparative Probability¹
- Incremental Probability

Sample Cognition:

- Might happen, might not
- Higher chance
- This is more likely than that
- High chance
- 50% more likely
- 12%
- 12% vs. 8%
- 4% more likely

Distinguishable From:

- Will/Won't
- Lower/Equal
- They are equally likely
- Normal/Average
- Other ratios, e.g., 40% more likely
- Other probabilities, e.g., 13%
- Other combinations, e.g., 15% vs. 10%, 12% vs. 11%
- Other increments, e.g. 5% more likely

Slide 10: How Do Risk Concepts Differ?

- Precision
 - Degree of clarity regarding exact likelihood
- Evaluability
 - Ability to evaluate the goodness or badness of the information
 - Both cognitive and emotional

Slide 11: Precision and Evaluability of Different Risk Concepts

table with 3 columns: "Risk Concept," "Level of Precision" and "Evaluability."

Risk Concept:

Source: Eisenberg Center Conference Series 2011, Differing Levels of Clinical Evidence: Exploring Communication Challenges in Shared Decisionmaking Effective Health Care Program Web site
<http://www.effectivehealthcare.ahrq.gov/index.cfm>

- Possibility
- Relative Possibility
- Comparative Possibility
- Categorical Possibility
- Relative Probability
- Absolute Probability
- Comparative Probability
- Incremental Probability

Level of Precision

- Minimal
- Vague
- Vague
- Defined by categories
- Ratio only
- Level
- Level, with Ratio by calculation
- Change in Level

Evaluability

- Very High
- High
- High
- Depends on categories
- High for ratio, Low for meaning
- Low
- High
- High for difference

Slide 12: What Does It Mean to Accept Risk Statement?

table with columns: “Risk Concept” and “Illustrative Statements of Absorption of the Risk Message.”

Risk Concept:

- Possibility
- Relative Possibility
- Comparative Possibility
- Categorical Possibility
- Relative Probability

Source: Eisenberg Center Conference Series 2011, Differing Levels of Clinical Evidence: Exploring Communication Challenges in Shared Decisionmaking Effective Health Care Program Web site
<http://www.effectivehealthcare.ahrq.gov/index.cfm>

- Absolute Probability
- Comparative Probability
- Incremental Probability

Illustrative Statements of Absorption of Risk Message:

- “It could happen to me.”
- “It is more likely to happen to me.”
- “I am more likely to have this happen to me than to have that happen to me.”
- “I am a person who has a higher chance of this happening.”
- “I have a risk that is higher to this degree.”
- “My risk is this.”
- “My (group’s) risk is this, which is higher than another’s (group’s) risk.” OR “My risk is this i I do X, which is higher than my risk i I do Y which is that.”
- “My risk will change that much if I do this.”

Slide 13: What Emotional Gist Meanings Do They Generate?

table with 2 columns: “Risk Concept” and “Illustrative Gist Meaning.”

Risk Concept:

- Possibility
- Relative Possibility
- Comparative Possibility
- Categorical Possibility
- Relative Probability
- Absolute Probability
- Comparative Probability
- Incremental Probability

Illustrative Gist Meaning:

- “I am at risk.” (*Implies negative feelings if for a bad outcome*)
- “I have a worse risk”
- “This is worse risk for me than that is.”
- “I have bad risk.”
- “My risk is worse.”
- Unclear without background knowledge
- “My risk is worse than their risk is.”
- “My risk is bad and worse if I do X.”
- “My risk will change a lot (or a little).” (*Affect depends on comparison to baseline*)

Slide 14: Patient Needs

Source: Eisenberg Center Conference Series 2011, Differing Levels of Clinical Evidence: Exploring Communication Challenges in Shared Decisionmaking Effective Health Care Program Web site

<http://www.effectivehealthcare.ahrq.gov/index.cfm>

- Patients have varying information needs
 - Sometimes need simpler risk concepts
 - Sometimes need detail
- Main Message: Risk communicators need to consider the *congruence* of risk format to patients' needs.

Slide 15: Need Congruent Types of Risk Knowledge

table with 3 columns: "Need" and "What Patients care About," and Congruent Types of Risk Knowledge."

Need:

- Avoid Surprise and Regret

What Patients Care About:

- Care that this could happen

Congruent Types of Risk Knowledge:

- Possibility

Slide 16: Need Congruent Types of Risk Knowledge (2)

table with 3 columns: "Need" and "What Patients care About," and Congruent Types of Risk Knowledge."

Need:

- Avoid Surprise and Regret
- Recognize Dominant Options

What Patients Care About:

- Care that this could happen
- Care this this is most/ least

Congruent Types of Risk Knowledge:

- Possibility
- Relative and Comparative Possibility

Slide 17: Need Congruent Types of Risk Knowledge (3)

table with 3 columns: "Need" and "What Patients care About," and Congruent Types of Risk Knowledge."

Source: Eisenberg Center Conference Series 2011, Differing Levels of Clinical Evidence: Exploring Communication Challenges in Shared Decisionmaking Effective Health Care Program Web site

<http://www.effectivehealthcare.ahrq.gov/index.cfm>

Need:

- Avoid Surprise and Regret
- Recognize Dominant Options
- Motive to Act or Not Act

What Patients Care About:

- Care that this could happen
- Care this this is most/ least
- Care that this is good/ bad

Congruent Types of Risk Knowledge:

- Possibility
- Relative and Comparative Possibility
- Categorical Possibility

Slide 18: Need Congruent Types of Risk Knowledge (4)

table with 3 columns: “Need” and “What Patients care About,” and Congruent Types of Risk Knowledge.”

Need:

- Avoid Surprise and Regret
- Recognize Dominant Options
- Motive to Act or Not Act
- Make Multi-Attribute Tradeoff Decisions

What Patients Care About:

- Care that this could happen
- Care this this is most/ least
- Care that this is good/ bad
- Care about this more than that

Congruent Types of Risk Knowledge:

- Possibility
- Relative and Comparative Possibility
- Categorical Possibility
- Comparative Possibility and/or Probability

Slide 19: Need Congruent Types of Risk Knowledge (5)

Source: Eisenberg Center Conference Series 2011, Differing Levels of Clinical Evidence: Exploring Communication Challenges in Shared Decisionmaking Effective Health Care Program Web site

<http://www.effectivehealthcare.ahrq.gov/index.cfm>

table with 3 columns: “Need” and “What Patients care About,” and Congruent Types of Risk Knowledge.”

Need:

- Avoid Surprise and Regret
- Recognize Dominant Options
- Motive to Act or Not Act
- Make Multi-Attribute Tradeoff Decisions
- Make Magnitude-Dependent Decisions

What Patients Care About:

- Care that this could happen
- Care this this is most/ least
- Care that this is good/ bad
- Care about this more than that
- Care that this X% not Y%

Congruent Types of Risk Knowledge:

- Possibility
- Relative and Comparative Possibility
- Categorical Possibility
- Comparative Possibility and/or Probability
- Precise Comparative or Incremental Probabilities

Slide 20: On the Comparative Irrelevance of Absolute Probability and Relative Probability Statements

- To borrow from Annie Get Your Gun!:

“Anything [they] can do, [other formats] can do better!”

Slide 21: Non-Meaningful Data

- Most risk data is generated in absolute probability or relative probability forms
 - Epidemiological studies: rates
 - Clinical trials: Odds ratios
- BUT: Original form ≠ Best format
 - “Curse of Knowledge”: Statistics are meaningful to researchers/clinicians, so hard to imagine they are not meaningful for patients

Slide 22: The Risk Communicator’s Task

Source: Eisenberg Center Conference Series 2011, Differing Levels of Clinical Evidence: Exploring Communication Challenges in Shared Decisionmaking Effective Health Care Program Web site
(<http://www.effectivehealthcare.ahrq.gov/index.cfm>)

- Identify patients' need for information
 - What specific understanding is needed?
- Tailor information formats
 - Use data formats that are congruent with patients' concrete informational goals

“The Right Tool at the Right Time”