

## Evidence-based approaches to communicating risks and benefits

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## Some potential barriers to effective communication of critical information

### Systemic

1. Insufficient, uncertain, and changing information

### The Communicator

2. Communicators overestimate what consumers know and how effectively they communicate

### The Patient or Consumer

3. Motivated information processing
4. Lack of comprehension and use of information

2

## How should we communicate?

### Evidence-based communication strategies

Peters, Meilleur, & Tompkins (2014). Numeracy and the Affordable Care Act: Opportunities and challenges. *Health Literacy and Numeracy*. Roundtable on Health Literacy, Institute of Medicine.

3

## Evidence-based strategies for communication (Peters et al., 2014, IOM)

1. Provide numeric information (as opposed to not providing it)

4

## The case of prescription drugs

- Individuals overestimate risk likelihoods when numbers are not provided
  - Non-numeric verbal descriptors
    - e.g., Very common, common, uncommon, rare, very rare or just a list of adverse events
  - Numeric risk estimates
    - 0.4% (percentage format)
    - 400 out of 100,000 people (frequency format)
- But effects on less numerate are unknown

5

## Should we use numbers? An experiment (Peters et al., 2014, *Medical Decision Making*)

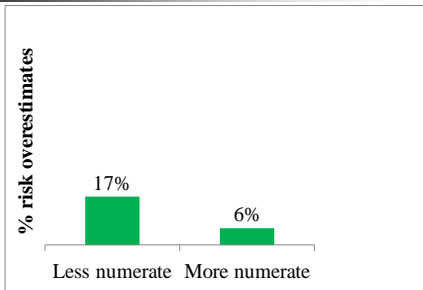
You have been diagnosed with high cholesterol, a major cause of heart disease and stroke. Your doctor has prescribed you a new medication to lower your cholesterol, but it has possible side effects.

### Possible Side Effects:

dry mouth
constipation, headache
stomach upset
dizziness
muscle damage leading to a very serious condition called rhabdomyolysis

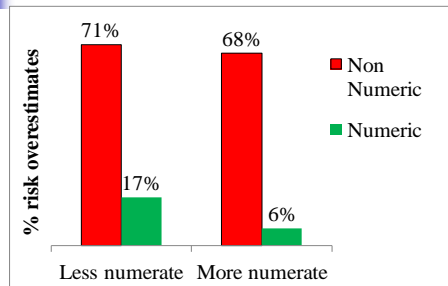
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In fact, when given numeric risk estimates, the less numerate overestimated more



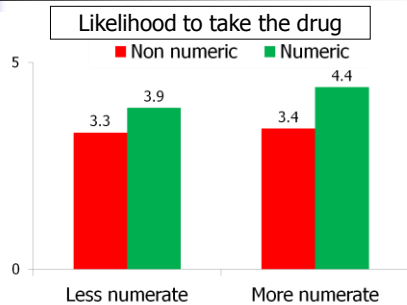
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But overestimates were much more common in the non numeric conditions regardless of numeracy



8

More and less numerate individuals were more likely to take the drug if provided numbers



9

Evidence-based strategies for communication (Peters et al., 2014, IOM)

2. Reduce the cognitive effort required from the patient or consumer
  - Provide fewer options
  - Provide less information

10

Provide less information

- Subjects choose among three hospitals based on cost, quality information, and other information
- Two conditions
  - Cost and quality information only
  - Cost, quality information, and other information

(Peters, Dieckmann, et al., 2007)

11

Condition = All information

Indicators	Hospital X	Hospital Y	Hospital Z
Your out-of-pocket costs	\$	\$\$\$	\$\$
Number of general care beds	550	231	180
Rated quality of hospital food (higher is better)	4.1	1.1	2.0
% of time guidelines for heart attack care are followed	82%	92%	87%
% of time guidelines for pneumonia care are followed	60%	89%	78%
Number of visiting hours per day	11	6	8
Number of Registered Nurses per 100 patients	18	38	29
Patient references available	Limited	Limited	Limited
Has computer system to prevent medication errors	No	Yes	Limited

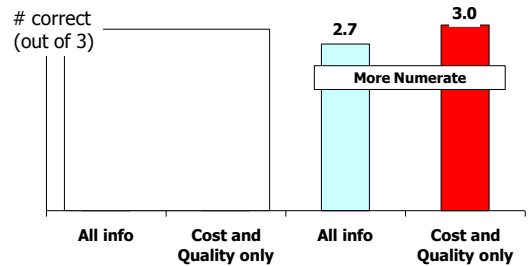
12

## Condition = Cost and Quality Information only

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13

## Including less information helped comprehension the most in the less numerate



14

## 2. Reduce cognitive effort

(Peters et al., 2014, IOM)

- Provide less information
- Provide fewer options
- Keep denominators constant
  - 1 out of 1,000 and 10 out of 1,000
  - instead of 1 of 1,000 and 1 of 100
- Keep time spans constant
- Etc.

15

## Evidence-based strategies for communication (Peters et al., 2014, IOM)

3. Provide affective meaning to increase use of risk information
  - Particularly when numeric information is unfamiliar

16

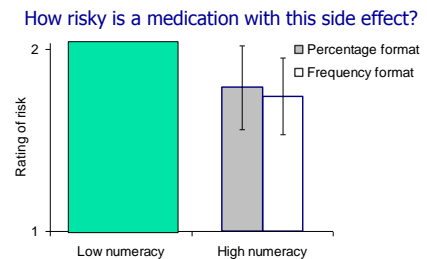
## Provide affective cues to increase use of risk information

- Carefully use frequency (10 out of 100) versus percentage (10% out of 100) information

17

## Frequency formats drive risk perceptions, especially among the less numerate

- 10% of patients get a bad blistering rash (% format)
- 10 out of every 100 patients get a bad blistering rash (Freq. format)



(Peters, Hart, & Fraenkel, 2011, *Medical Decision Making*)

## Evidence-based strategies for communication (Peters et al., 2014, IOM)

3. Provide affective cues, particularly when numeric information is unfamiliar
  - Carefully use frequency versus percentage formats
  - Use more imaginable data formats (e.g., months of life lost instead of disease risks)
  - Use emotion to persuade
  - Use emotion to engage

19

## Evidence-based strategies for communication (Peters et al., 2014, IOM)

4. Call attention to the most important information
  - Order information with the most important information first or last
  - Direct attention (e.g., format of fonts)

**Bigger, Bolder,  
Different color**

20

## Changing font sizes

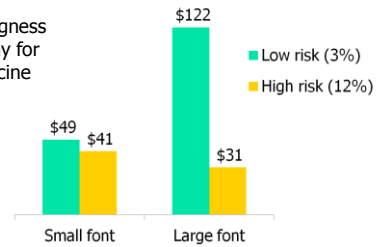
Imagine a vaccine for a serious disease

Your risk of a serious side effect is: 3%

Example of low 3% risk, small font stimulus

## More sensitive to vaccine risks when in attention grabbing font

Willingness to Pay for Vaccine



## Life is a balance between risks and benefits



23

## Communication is not as easy as experts expect



24

## Communication is not as easy as experts expect



## Take-home recommendations

### Identify communication goals

Then choose information presentation techniques strategically

1. Provide numbers
2. Reduce cognitive effort for consumers
3. Provide affective cues, particularly when numeric information is unfamiliar
4. Call attention to the most important information

26

## Conclusions

- Barriers exist to successful communication of health information
- Consumers are not adept at using complex information important to health choices
- Evidence-based communication techniques exist
  - And should be used strategically

27

Thank you !

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28