

# *Medical Decision Making, Ethics, and Behavioral Economics*

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- I receive grant funding from AHRQ, PCORI, NIH and The Greenwall Foundation for research on medical decision making and ethics.

## Identify

Identify some of the decisional biases & heuristics that influence patient decision-making.

## Analyze

Analyze the impact of those on informed consent.

## Describe

Describe the ethical concerns with using this knowledge to shape and improve patients' decisions.

# The Decision Making Ideal

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“Over the past 40 years, there has developed an assumption that the **physician’s principal task** is to **remove impediments** to the exercise of autonomy, and that once those impediments are gone, people will **naturally gather evidence** about the risks and benefits of each medical choice, apply their values to that evidence and **reach a considered decision.**”

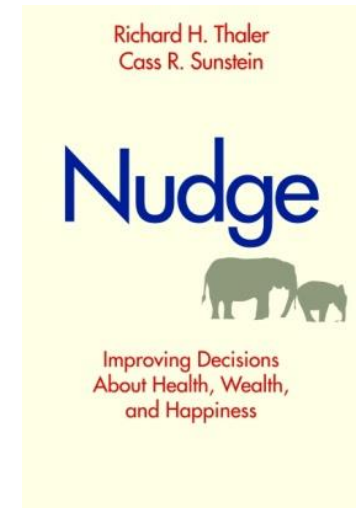
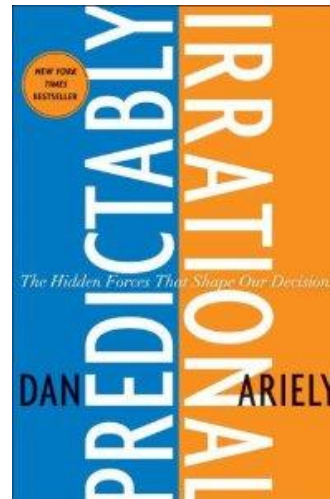
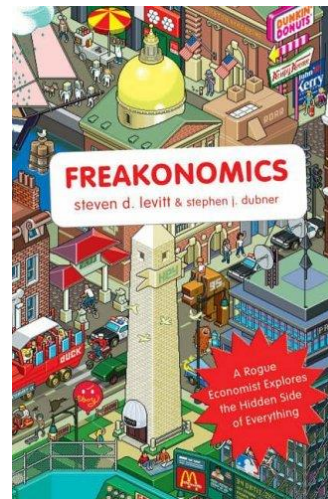
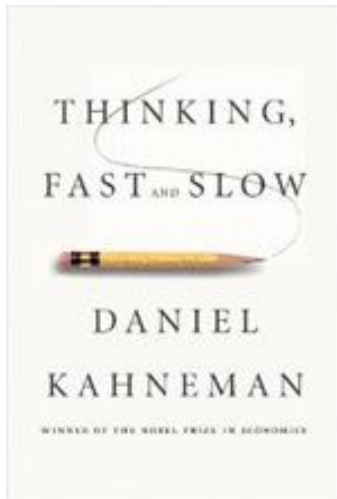
–Carl Schneider

The Practice of Autonomy

# Problems for the Ideal: Behavioral Economics

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Evidence from the field of behavioral economics showing that patients typically use intuition, **impulse**, and various “**cognitive biases and heuristics**” in decision-making.

# Intuition and Impulse

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“Even patients sufficiently well educated and reflective to write memoirs frequently describe no decisional process at all. Instead, they invoke intuition, instinct, and impulse.”

—Carl Schneider



# Intuition and Impulse

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Study:

Of 130 living kidney donors:

- 62% made immediate choice to donate
- only 25% deliberated.

(Simmons, Marine, & Simmons, 1987)



# Intuition and Impulse

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## LVAD Decision-Making

45 interviews.

-30 reported quick and reflexive decision making

-28 no real choice

-22 deferred heavily to clinicians



(Blumenthal-Barby et al., 2015)



# Heuristics and Biases

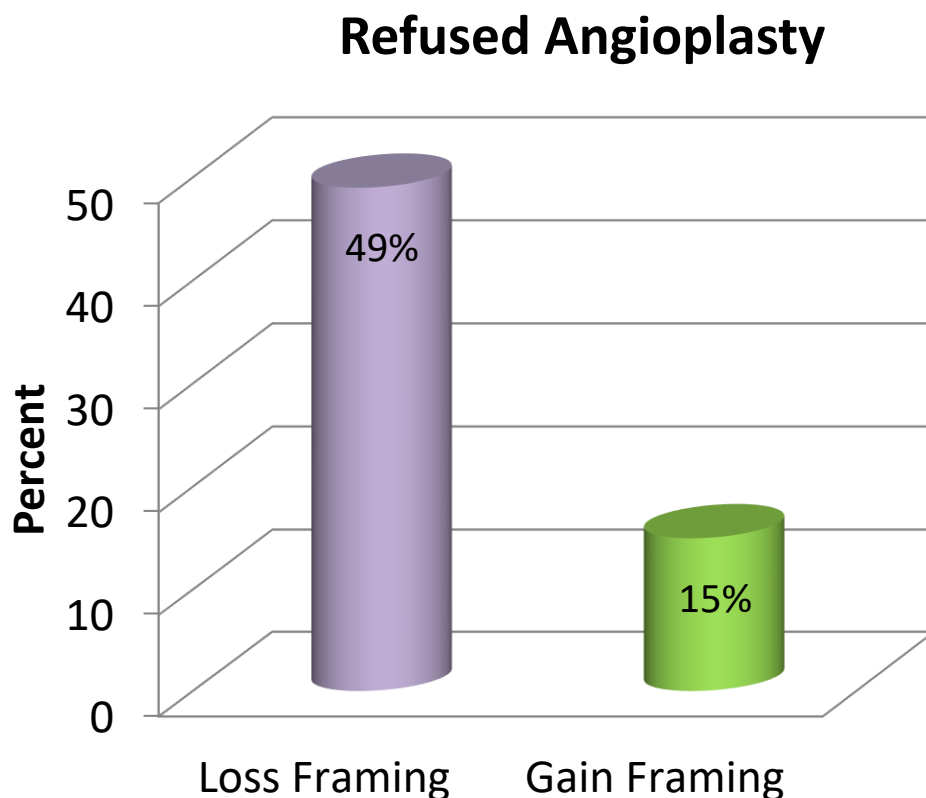
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## Loss Aversion Bias

“Losses loom larger than gains”



Hypothetical  
Angioplasty Decision:

Loss Framing

- “1 in 100 have complications”

Gain Framing

- “99 in 100 have no complications”

(Gurm & Litaker, 2000)

# Heuristics and Biases

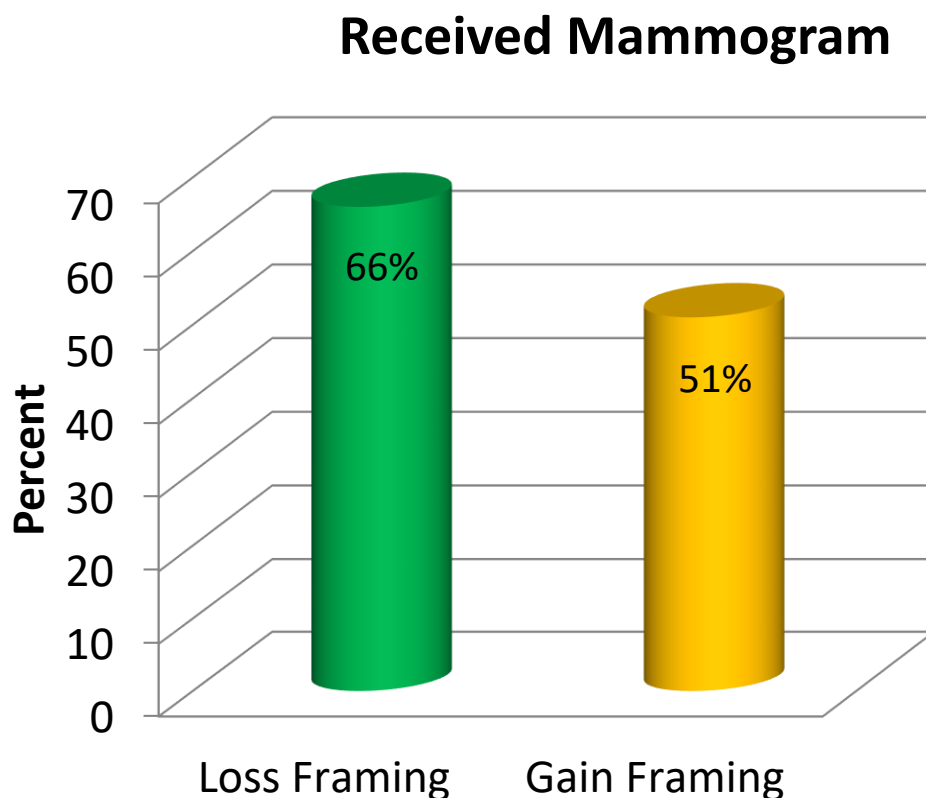
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## Loss Aversion Bias

“Losses loom larger than gains”



Study with Women  
Receiving:

Loss Framing

- “risks of neglecting mammography”

Gain Framing

- “the benefits of mammography”

(Banks, et al., 1995)

# Heuristics and Biases

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## Frequency Bias

“Risk information as frequency is more influential”

41% of psychiatrists refuse to discharge a patient when told the risk of violence is 20 in 100.

21% when told it is 20%.

(Slovic, 2000)

$$\frac{23}{100} = 23\%$$

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## Discounted vs. Regular

“Cheaper is perceived as less effective”

	Regular Price Placebo	Discount Placebo
Pain reduction	85%	61%
Pain increase	6%	16%

(Waber, 2008)



# Heuristics and Biases

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## Relative Risk Bias

“Relative risk is more influential than absolute”

301 women at risk for developing breast cancer:

Gail Score (Absolute)	Gail Score (Absolute) + Comparative Risk
	More worried, more screening.

(Lipkus, 2005)

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## Comparison Contrast Bias (Decoy Effect)

“Middle of the road options are preferable”



(Simonson 1989, Schwartz and Chapman 1999)

# Heuristics and Biases

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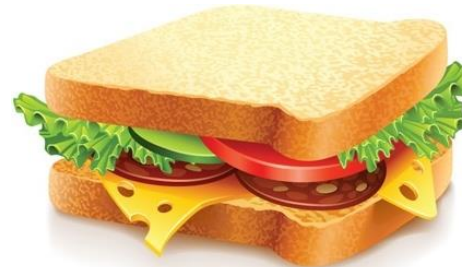
## Recency and Primacy Bias

“First and last is most influential”

Women at risk for breast cancer informed about the preventative drug Tamoxifen.

-benefit, risk, benefit (more interested in the drug)

-risk, benefit, risk



(Ubel et al., 2009)

# Heuristics and Biases

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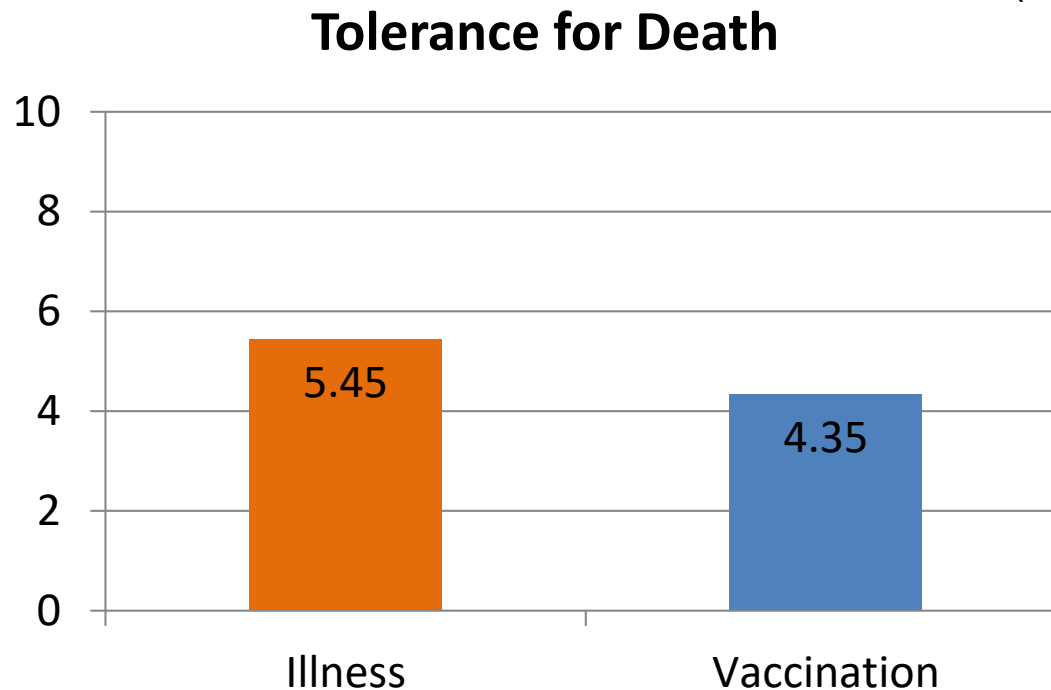
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## Omission Bias

“Bad outcomes as a result of non-action are better than ones caused directly”

(Ritov & Baron 1990)





## Commission Bias

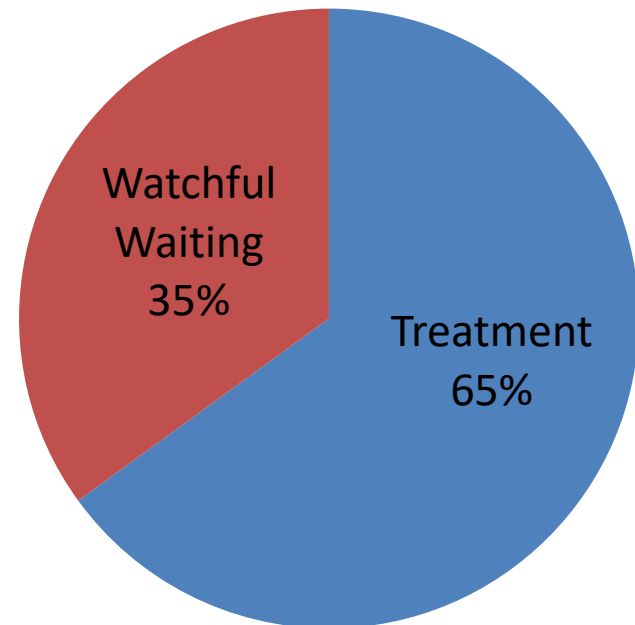
In cancer care, we see more of “Trying something is better than trying nothing”

Study:

Given a hypothetical cancer diagnosis:

- Treatment has a 10% chance of death
- Watchful waiting has a 5% chance.

### Cancer Treatment Preferences



(Fagerlin, Zikmund-Fisher, & Ubel, 2005)

# Heuristics and Biases

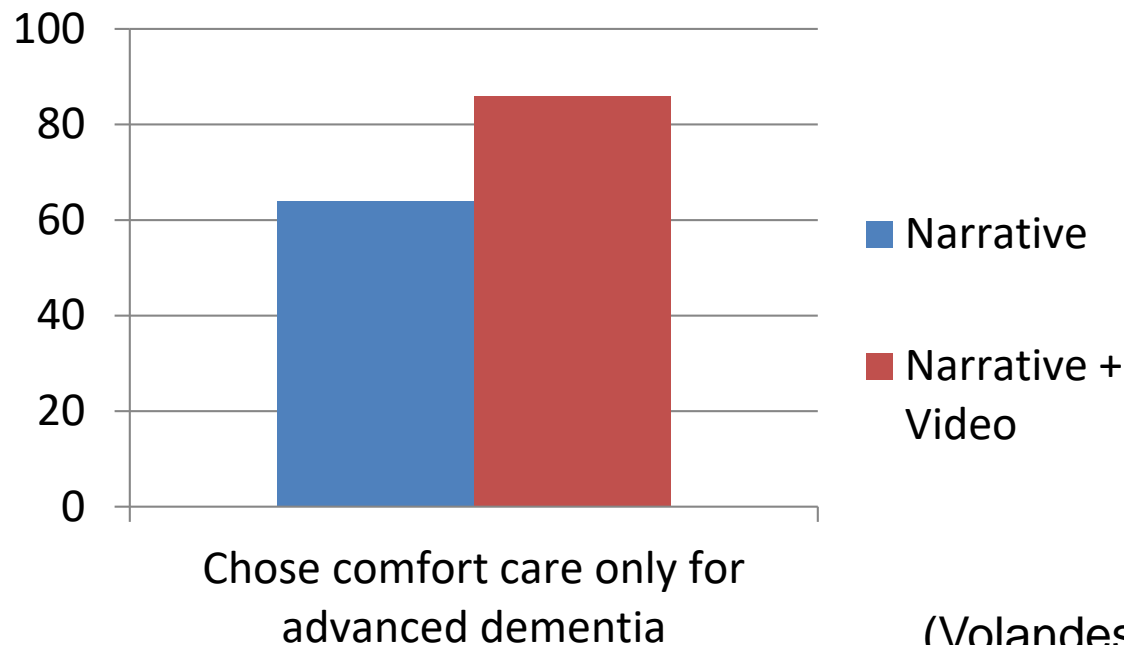
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## Availability Bias

“Most recent, vivid, and memorable seem most likely and are most influential”



(Vollandes et al., 2009)

# Heuristics and Biases

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## Default Bias

“Go with the status quo”

No LST as default on advance directive – 20% favor treatment,  
Provision of LST as default – 38% favor treatment

(Kressel, Chapman, Leventhal, 2007)



# Heuristics and Biases

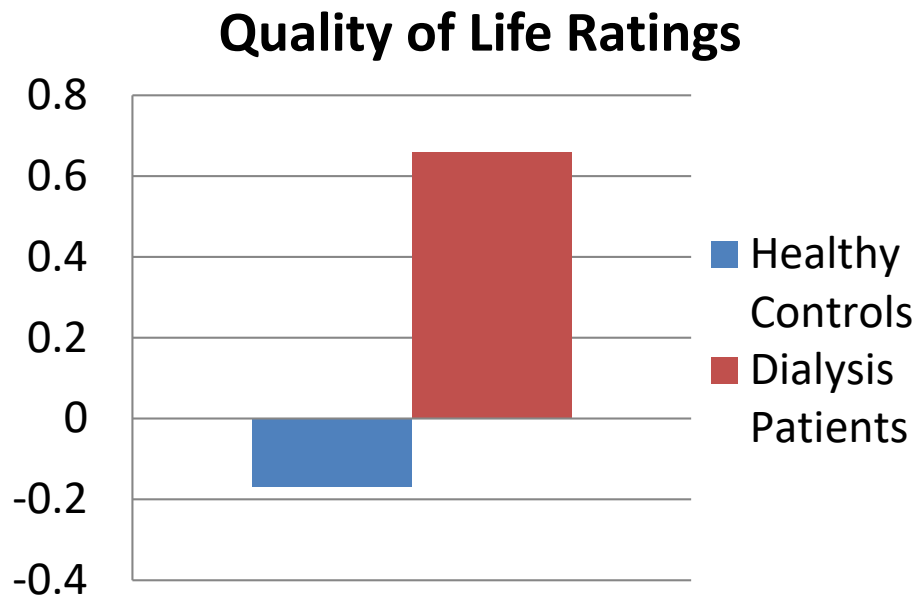
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## Impact Bias and Forecasting Errors

Errors in anticipating future well-being and QOL



Study:

Healthy control patients anticipated life on dialysis compared to actual dialysis patients (on a -2 to 2 mood score).

(Riis, et al., 2005)

# Heuristics and Biases

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## More Forecasting Errors

Imagine life after transplant...

Domain	Pre-transplant	Prediction for Post-transplant	Actual Post-transplant
QOL (1-100)	66	91	83
Travel (days/year)	9	20	12
Work (hours/week)	2	32	15
Energy (1-5)	3.2	4.9	4.3

(Smith et al., 2008)

# Heuristics and Biases

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## Escalation/Cascade/Sunk-Cost Bias

“We’ve already invested in this path, so let’s just keep going”



Study:

Patients continued a treatment plan (physiotherapy) even though it was not working because money had already been invested in it.

(Coleman, 2010)

# Heuristics and Biases

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## Inventory of heuristics and biases in patients' and clinicians' decision-making (review of 213 studies)

19 types of cognitive biases

90% confirmed

30% tested clinicians, 66% patients

80% clinician studies confirmed

61% patient studies confirmed

Loss aversion, relative risk, availability



(Blumenthal-Barby and Krieger, 2014)

# Ethical Issues

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# Informed Consent/Autonomy?

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Elements of informed and capacitated decision making: understanding, reasoning, appreciation, clear and consistent choice (Appelbaum, 2007)

Autonomy: govern self and act on own preferences.

Given errors in forecasting future preferences, preference dependency on context/framing effects, biases in decision making, gut decisions etc....maybe not so much.

# Harmful Decisions?

Possibly.

Consider: A patient decides not to undergo a needed surgery because someone she knows died during a similar surgery (availability bias).

A patient refuses LST because she mis-predicts the impact of illness (impact bias/forecasting error).

A patient with low-risk prostate cancer chooses immediate treatment with risk of impotence (commission bias)

# What to Do?

What can we do to try to help patients make more informed, better decisions?

**Override** their decisions and do what we want because they are not as autonomous as thought? No.

**De-bias** them/strip them of all biases and heuristics? Not possible. Also, you must frame things one way or another.

Instead, **harness** the power of these biases and heuristics and re-channel them to lead the patient towards decisions that are in accord with their values and goals.

# Nudging/Shaping Decisions

Harnessing knowledge of decision psychology/behavioral science to lead patients towards decisions that are in accord with their values and goals (“nudging”).

Sometimes also called “choice architecture”



“A choice architect has the responsibility for organizing the context in which people make decisions. Many real people turn out to be choice architects, most without realizing it.”

(Thaler & Sunstein, 2008)

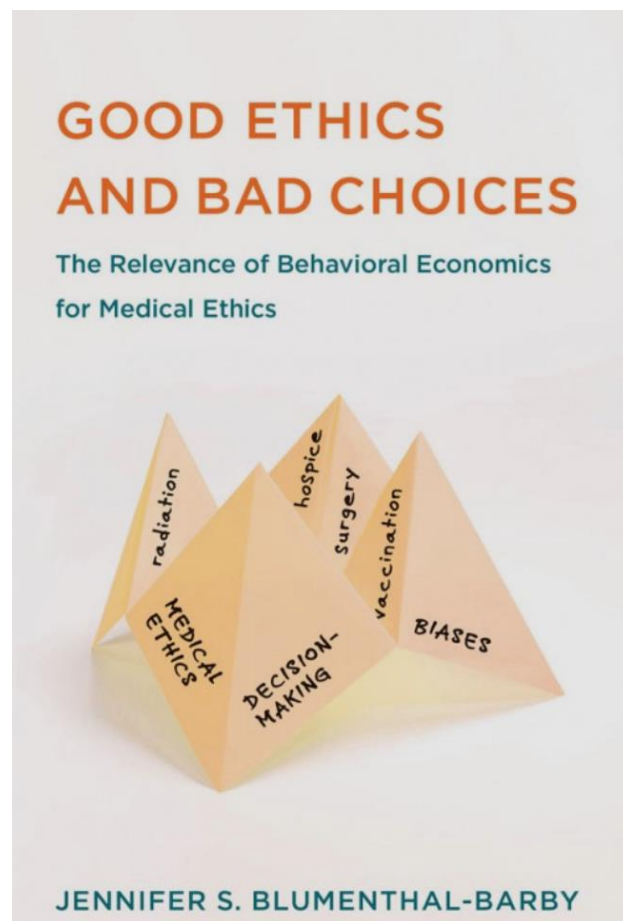
- Power should be used reflectively.
- With patient's interests in mind, not ours.
- Cases where it is clear which treatment decision or health behavior would foster patient's values and goals.
- Cases where the patient's decision seems influenced by biases and heuristics rather than deeply held values (compare nudging a patient who doesn't want a transfusion because of availability bias to nudging a JW).
- Do not nudge in a way that alienates patients and harms the physician-patient relationship (consider scare tactic videos for vaccinations).

# Thank you and Discussion

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<https://www.amazon.com/Good-Ethics-Bad-Choices-Behavioral/dp/026254248X>



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