ALTHOUGH PATIENTS FREQUENTLY MAKE DECISIONS ABOUT THE
risks of medical treatments, their understanding of such risks may not be completely objective. Risk perception is af-
fected not only by individual factors such as the patient’s sex, prior beliefs, and past experience;1,2 but also by how
the risk information itself is presented.

Identical risk information may be presented in different
ways, resulting in “framing bias.” Perceptions of risk are par-
ticularly susceptible to framing effects.3 For example, pa-
tients are much more likely to favor radiation treatment over
surgery when radiation is presented as having a 90% sur-
vival rate than when it is presented as having a 10% mortal-
ity rate. Although both numbers describe identical risks, the
latter is perceived as more dangerous.4 Another common fram-
ing effect involves absolute and relative risks. For example,
if a medication reduces an adverse outcome from 20% to 15%,
then the absolute risk reduction is 5% and the relative risk
reduction is 25%. Although the absolute and relative risk es-

timates are derived from the same data, patients are more
strongly persuaded by the larger changes in relative risk.4

The impact of framing on risk perception is often over-
shadowed by the effects of low numeracy. Numeracy refers
to the ability to use numerical concepts and to perform ba-
sic probability operations. In one study of randomly se-
lected women at a Veterans Affairs hospital, 46% could not
correctly answer how many coin flips out of 1000 would
turn up heads. Among these women, numeracy scores were
related more strongly than framing effects to their ability
to interpret risk estimates correctly. After controlling for de-
mographic factors and whether the risk was framed as rela-
tive or absolute, women with high numeracy scores were
13 times more likely to interpret risk estimates correctly than
women with low numeracy scores.5

Despite this propensity to misinterpret statistical risk in-
formation, patients often prefer quantitative over qualita-
tive explanations of risk.2 Preferences for numerical risk es-

timates may stem from an inaccurate perception that these
numbers represent some objective certainty. In one study of
risk communication in genetic counseling, only 3 of 46
counseles understood that their risk estimates involved a
degree of uncertainty.2

For patients with low numeracy skills, qualitative ex-
planations may improve understanding. Despite variation in
people’s understanding of words like “rarely,” “sometimes,” and
“often,” these descriptors can be contextualized by compar-
ing them to everyday risks like being involved in an auto-
mobile crash.3 This allows patients to compare the medical
risk with risks whose severity and frequency they already un-
derstand.6 Narratives about risks facing people who are simi-
lar to the patient are also useful in helping patients context-
ualize risk. For example, personalized accounts by HIV
positive people have been shown to lead to increased per-
ceptions of risk among at-risk patients who identified with
the individuals depicted in the stories.7

There are instances when it is difficult to avoid a quan-
titative discussion of risk. In these situations, clinicians can
employ various techniques to improve patient understand-
ning. Individualized risk estimates use the individual’s per-
sonal risk factors (eg, age, sex, race) to compute the prob-
ability of developing a specific health problem in a given
period of time.8 Individualized risk estimates have been
shown to influence patients’ treatment choices more strongly
than presenting general risk information, and may also re-
sult in increased screening behavior.9 Visual displays of risk
information may also increase patient understanding more
than qualitative or quantitative explanations alone. These
include risk ladders, which place risks in decreasing order
of magnitude alongside equivalent comparisons of every-
day risks, and the Wall of Balls, in which a risk of 1 in 1000
would be presented as one colored dot on a page with 999
different dots. Such displays improve understanding of the
difference in magnitude between risks.10

The goal of risk communication is to help patients make
informed decisions about treatment options, medication regi-
mens, and lifestyle changes. To make such communication
a useful decision-making aid for the patient is thus an ar-
duous task, but one that can be aided by employing a mix of
techniques that accommodate the varying preferences and
abilities of different patients.

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ADVANCE DIRECTIVES PROVIDE A LEGAL MEANS FOR PATIENTS to state treatment preferences in advance, should they later become unable to participate in decisions about their care. In 1990, Congress adopted the Patient Self Determination Act, which sought to increase the use of advance directives. However, a 1999 study of members of a health maintenance organization found that only one-third of patients aged 65 years or older reported having filed an advance directive. Although such decisions may later be made by others acting as proxies, their judgments of patients’ treatment preferences may not be accurate. Through communication with their patients about advance directives, physicians can play a key role in making advance directives a more effective part of patient care. In the previously cited study, only 15% of patients reported having been asked about their advance care preferences by a physician or nurse, although patients were 3 times more likely to establish an advance directive if they have been asked about their wishes. Many physicians fail to initiate such discussions because they may worry about spending too much time on them, but in fact such discussions average less than 3 minutes in length. Physicians may also fear that patients are uncomfortable discussing issues surrounding their own mortality. In contrast to this assumption, one study found that 93% of outpatients and 89% of the general public were interested in discussing advance directives, with young and healthy individuals expressing as much interest as older, less healthy people. A retrospective study of decedents in a Midwestern community found that 85% had had advance directives, and suggested that the unusually high rate of use was the result of an extensive educational program on end-of-life planning. This implies that advance directives can be both widely used and effective, provided the resources exist to increase patient awareness. While increasing advance directives is an important goal, a greater challenge lies in modifying them to better reflect patient preferences. Advance directive forms that are standard in US health care facilities ask patients general questions, which may or may not be applicable to a patient’s individual circumstances. In addition, patients often misunderstand their options to refuse or withdraw treatment or to choose palliative care. It is possible that even with an advanced directive in place, patients may not receive the care they would want. Patients must be educated about treatment options in order to make well-informed decisions about their future care. A simple way to accomplish this goal is to focus on the acceptability of potential treatment outcomes to the patient. A recent qualitative study of elderly individuals found they were more concerned with functional outcome than with the medical techniques used to achieve that outcome. One method of assessing the acceptability of treatment is to use scenario-based decision aids describing different treatment options and their potential outcomes. Assessing patients’ understanding and willingness to accept potential treatment outcomes increases the likelihood of informed consent and enhances the utility of advance directives. In some cases, advance care decisions are made by someone other than the patient. The accuracy of proxy judgments can be enhanced when the patient and his or her proxy have discussed advance care issues. This is in accord with research demonstrating that patients consider planning advance care to be a social interaction between loved ones, rather than simply a matter of signing forms. Promoting collaboration between family members and loved ones may minimize the ambiguity often found in advance directives, and may better prepare surrogates to make treatment decisions. Physicians can take an active part in this process by encouraging their patients to discuss advance care issues with their chosen surrogates. Although systemic changes such as computerized reminders can encourage physicians to integrate advance planning directives in their routine patient care, such discussions will still require meaningful communication with patients. Through such discussions, physicians have the opportunity to play a central role in increasing both the effectiveness and use of advance directives.

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