USING QUALITATIVE TERMS IN THE STANDARD GAMBLE
A PILOT STUDY
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INTRODUCTION
The healthcare environment is becoming increasingly complex.
• Sophisticated diagnostic information
• Multiple treatment options
• Conflicting recommendations
• Greater patient role in management decisions

Patients are being asked to weigh the risks and benefits associated with treatment options and make choices that reflect their individual preferences.

Expected utility decision making and cost-effectiveness analysis require the assessment of health-related utility. Preferred methods of utility assessment include the standard gamble and time tradeoff; both methods place high cognitive demands on the respondent.

The validity of a utility score may be threatened by the subject's health numeracy skills. People who lack basic numeracy skills may be unable to respond in a manner that reflects their true strength of preference for a health state.

Here, we define health numeracy as the degree to which individuals have the capacity to access, process, interpret, communicate, and act on numerical, quantitative, graphical, biostatistical, and probabilistic health information needed to make effective health decisions.

One study (Schwartz, McDowell, Yueh, 2004; Head & Neck) showed that utility scores in head and neck cancer patients were affected by the patients' numeracy skills.

In this study, we pilot-tested a new approach to the standard gamble (SG) that uses qualitative rather than quantitative descriptions of probability. Of interest is whether differences between the qualitative and quantitative standard gamble formats can be explained by differences in numeracy skills.

SUBJECTS
87 undergraduate students taking a business class
21 years of age on average
52% Male
82% White, 12% Black, 6% Other
Most were enrolled in non-business majors with rigorous math requirements

METHODS
Subjects rated the utility of oropharyngeal (throat) cancer using two forms of the paper standard gamble.

Probability of perfect health or death was presented:
Quantitatively (“80% chance of cure”) Qualitatively (“Treatment is likely to be successful”)

Qualitative gambles were constructed using the terms: always, extremely likely, likely, probable, possible, unlikely, rarely, and never.

RESULTS

Utilities derived using the quantitative SG and qualitative SG were significantly correlated (r=.41, p<.0001)

Mean utilities estimated with the qualitative SG (M=.81, SD=.18) were significantly higher than those estimated with the quantitative SGs (direct estimation, M=.68, SD=.23; VAS estimation, M=.68, SD=.22). The qualitative utilities derived from direct estimation or the VAS were not statistically different.

Differences between the quantitative (direct estimation, r=.04; VAS estimation, r=.02) and qualitative utilities were unrelated to the subject's numeracy score.

On average, subjects answered nearly 80% of the numeracy questions correctly.

CONCLUSIONS
Overall, subjects were highly numerate and demonstrated, via direct estimation and the VAS method, a consistent understanding of the qualitative probability terms.

When given the opportunity to choose between gambles in which their own subjective interpretations served as the index of risk, subjects took higher risks (i.e., had lower utilities) than they did when the risks were presented numerically.

Additional qualitative terms may be necessary to allow subjects to provide more precise estimates of their utility for the health state. An ongoing study is expanding the list of probability terms to 20 in order to match the number of probability terms the decision maker has on the quantitative gamble.

A standard gamble that is accessible to individuals with low numeracy skills will be useful for advancing the field of medical decision making.

Qualitative gambles were constructed using the terms: always, extremely likely, likely, probable, possible, unlikely, rarely, and never.

Subjects assigned numerical values to the qualitative terms directly and with visual analog scales (VAS). These numerical values were then used in the determination of the utility.