

Presenting Benefits Before Risks: Does It Affect Decision Making?

Bergus GR, Levin IP, Elstein AS. Presenting risks and benefits to patients. The effect of information order on decision making. *J Gen Intern Med* 2002;17:612-7.

Study Overview

Objective. To investigate whether patients are influenced by the order in which they learn the risks and benefits of treatment and whether this effect is attenuated by a treatment's risks and benefits.

Design. Randomized trial.

Setting and participants. 685 adult patients aged 18 to 70 years were recruited from the waiting room of primary care physicians' offices at an academic medical center.

Methods. Patients were randomized to review medical treatment information brochures for 1 of 3 treatment options for symptomatic carotid artery disease. The first (aspirin) was low-risk/low-benefit; the second (carotid endarterectomy surgery) was high-risk/high-benefit; and the third (extracranial-to-intracranial bypass surgery) was high-risk but of unknown benefit. With each treatment option group, patients were randomized to receive information in which the risks of treatment were presented either before or after the benefits.

Main outcome measures. Patients were asked to rate the favorability of the treatment option on a scale of 0 to 100. Patients also were asked if they would consent to the treatment and how their decisions were influenced by the risks and benefits described.

Main results. Patients evaluating aspirin therapy were influenced by the order in which risks and benefits were presented. Patients who learned about the risks after the benefits had a greater drop in the favorability ratings compared with those who learned about the risks before benefits (-10.9 versus -5.2 ; $P = 0.02$) and were less likely to consent (odds ratio, 0.44 ; $P = 0.04$). In contrast, patients evaluating carotid endarterectomy and extracranial-to-intracranial bypass were not influenced by the information order. Patients who evaluated the aspirin therapy reported significantly less influence of risks on their decision making than those who evaluated the 2 surgical options.

Conclusion. Patients evaluating aspirin, a low-risk/low-

benefit treatment formed less favorable impressions of the treatment and were less likely to consent to the treatment when they learned about the risks after benefits. This ordering effect was not observed in patients evaluating the surgical options.

Commentary

Patients making informed consent decisions about treatment options need to weigh the benefits against the risks. However, previous research has indicated that the decision-making process is susceptible to biases and framing effects [1]. More recently, experiments have documented that the order in which information is presented can influence physicians' diagnostic judgment [2]. Therefore, Bergus et al attempted to ask a very important and relevant question in this study: can patients' judgment about treatment options be biased by the order in which risks and benefits are presented?

The present study offers an intriguing set of observations. Patients who evaluated a particular low-risk/low-benefit treatment (aspirin) for carotid artery disease were subject to this ordering effect, whereas those who evaluated a certain high-risk/high-benefit treatment (carotid endarterectomy) and another high-risk/unclear benefit treatment (extracranial-to-intracranial bypass) were not. Based on these observations, the authors concluded that the ordering effect influences decision making for treatments involving low risks but not for those involving high risks.

Since the study used a randomized design in which patients acted as their own controls, its basic observations about the ordering effect are valid. However, we need to examine whether the authors' conclusions are supported by the study's observations. While all 3 clinical scenarios address treatment options for carotid artery disease, the difference in the 3 options lie far beyond the absolute magnitudes of risks:

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patients have different familiarity with each treatment, and each treatment can lead to completely different sets of complications. In other words, each treatment option cannot serve as each other's control, and any observed differences among the 3 groups cannot be attributed solely to differences in treatment risks. If the authors wanted to draw conclusions about the impact of risks on the ordering effect, then the absolute magnitude of treatment risk should have been the only variable that differed amongst the 3 groups.

Other methodological problems also call into question the validity of the results. Patients were not educated about the health states associated with each of the treatment complications, and therefore the decision they made on these treatment options was not truly "informed." Their personal views about possible complications were neither solicited nor recorded, and this potential confounder could not be controlled in the analysis that compared high-risk with low-risk treatments. The use of the 100-point scale without any standardized visual scales made it questionable whether the measured outcomes can truly be interpreted on a linear scale.

Since most communication about treatment risks and benefits occur during physician-patient encounters, the use of brochures to present risks and benefits makes these results difficult to generalize to clinical practice. Also, since patients were free to re-read the risks and benefits presented on the brochures, it is not clear if the patients read the risks and benefits in the order intended by the researchers.

Setting aside the validity and generalizability of the study at hand, the line of inquiry raised by Bergus et al could have profound implications on the informed consent process if the ordering effect can be confirmed for other clinical conditions. Until further research becomes available, physicians might be prudent to guard against this potential source of bias in patients' decision-making process by ensuring that both risks and benefits are thoroughly communicated and revisited before patients make decisions about treatment options.

Applications for Clinical Practice

This study provides limited evidence that patients evaluating aspirin therapy for carotid artery disease based on written information may be biased by the order in which risks and benefits are presented. This ordering effect was not seen for patients evaluating 2 other surgical options for treatment of carotid artery disease. Whether the ordering effect influences the decision-making process for other clinical conditions and during interactive oral communications remains an area requiring further research.

—Review by Eric G. Poon, MD

References

1. Eraker SA, Sox HC Jr. Assessment of patients' preferences for therapeutic outcomes. *Med Decis Making* 1981;1:29-39.
2. Bergus GR, Chapman GB, Levy BT, et al. Clinical diagnosis and the order of information. *Med Decis Making* 1998;18:412-7.

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