

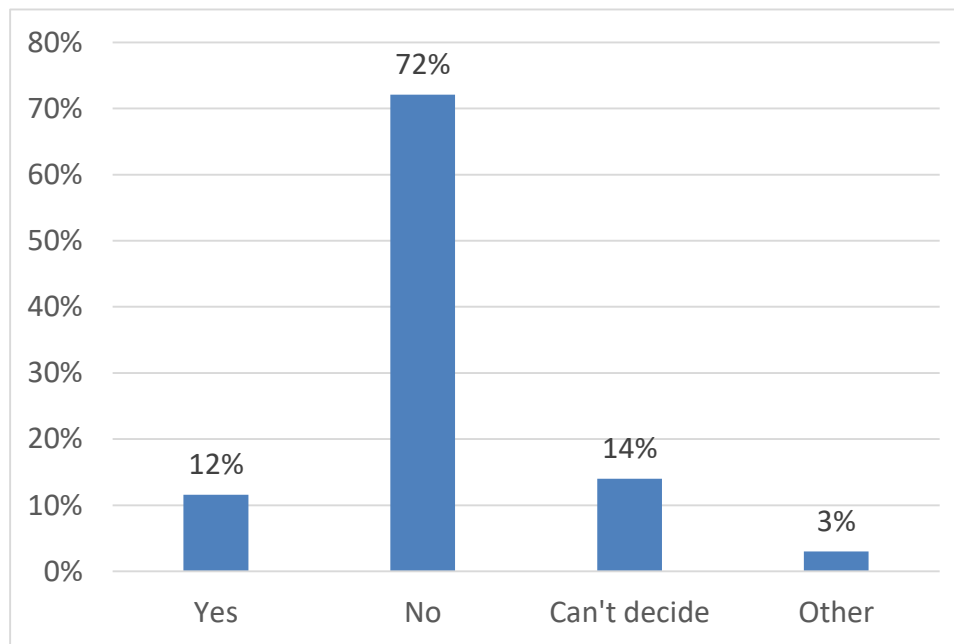
## Clinical Research Ethics Question of the Month: Quantum Diagnosis

By Norman M. Goldfarb

You are a member of an IRB that is reviewing a diagnostic study for a new viral disease, PVD, that, in exactly 50% of those infected, causes Polaiter dementia. The PVD virus has infected the entire population. Dementia does not evidence itself until age 70. If detected before age 30, it can be treated successfully. The experimental test is believed to be 100% accurate in identifying who will get dementia. However, it has the unique "quantum" effect of flipping the medical condition of the person tested. A person who would not have gotten dementia will leave the test and later get dementia, and vice versa. In other words, the test itself will cure 50% of those tested, and give dementia to the other 50%. The test can be taken only once. In either case, study participants will learn whether they have the condition, and can then plan their lives accordingly. In addition, results from the study will tell the researchers how to end the quantum flipping effect.

### Results

#### Question 1. Will you vote to approve this study?



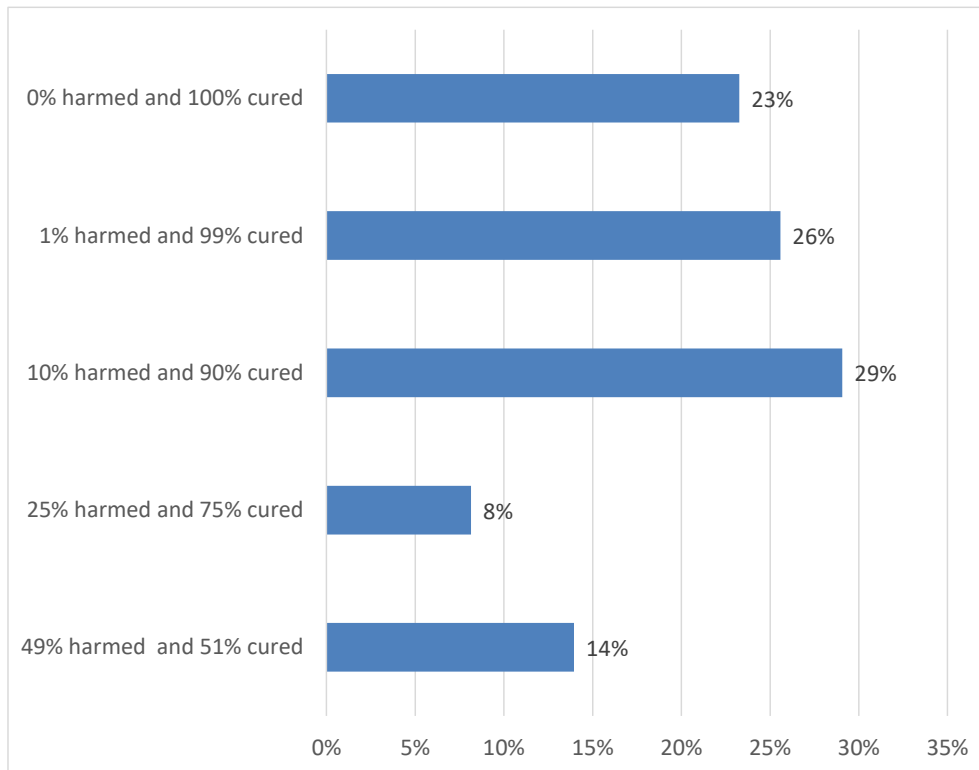
Of the 86 respondents, 12% would vote for approval of the study and 72% would vote against approval of the study.

Respondents made the following comments and asked the following questions:

- The researchers will learn how to end the quantum flipping effect. This is a huge benefit.
- As long as the risks and benefits are clearly and accurately explained, people have the right to choose.

- With a genetic disease where there is no cure, patents can still benefit by being able to make life planning choices.
- The Hippocratic oath is to do no harm.
- Limit enrollment to people under 30 years of age.
- Are there any existing tests?
- What is the likelihood of dementia from other causes?
- Treatment should be provided for those the test converts to the dementia group.
- How accurate is the test?
- Is the treatment 100% effective?
- Why not just treat everyone?
- A data safety and monitoring board (DSMB) should stop the study as soon as possible.
- Include only those with a certain life expectancy of less than 70 years old.

**Question 2. If the ratio were not 50%, what is the worst ratio that you would find acceptable?**



Twenty-three percent of respondents would accept no risk (harm:benefit ratio of 0%). Twenty-six percent would accept minimal risk (harm:benefit ratio of 1%). Fifty-one percent would accept higher risk (harm:benefit ratio of 10% to 49%).

**Discussion**

In the classical bioethics “trolley problem,” you must decide whether to sacrifice one life to save multiple lives. People in cultures (e.g., the United States) that prioritize the rights of the individual are generally not willing to harm one person to help several others. On the

other hand, people in cultures that prioritize the rights of the community generally are willing to harm one person to help several others.

In the study at hand, it appears that half the participants would be significantly harmed and half significantly helped. Also, it is unknown which would be which. The situation is similar to a therapeutic study of a new drug in which half the participants would be helped and the other half harmed. From this perspective, the IRB should not approve the study.

The fact that people could be fully informed of the risk of participation and decide, nevertheless, to enroll in the study does not relieve the IRB of its ethical responsibilities. Studies require both IRB approval and informed consent, not one or the other.

Question 2 above addresses the issue of acceptable risk. About half of the respondents consider the acceptable risk to be 0% or 1%, and the other half would accept higher levels of risk. The first group appears to be more interested in protecting the individual and the second group more interested in protecting the community, suggesting that the pre-eminence of individual rights over community rights in the U.S. (where most respondents are probably located) is not as strong as commonly believed.

Half the study participants will directly benefit and half will be directly harmed. However, all participants will learn their health status (assuming test results will be shared with the participants). While this might appear to be a minor benefit compared to the risk of dementia later in life, some people might *really* want to know. The phrases "I cannot live with the uncertainty" and "the uncertainty is killing me" come to mind. In contrast, other people explicitly do not want to know. The IRB might thus decide to approve the study for people who find life unbearable without the knowledge.

As suggested by one of the respondents, the IRB could also approve the study for people who will not live to age 70. Since these people cannot benefit from or be harmed by the study, their participation would be entirely altruistic.

Several respondents would approve the study for people under the age of thirty, since those converted to the dementia group could be treated and cured. (The IRB might require the study sponsor provide the treatment.) It is not clear how many respondents noticed that, since the other 50% would be cured by the diagnostic test itself, none of the participants would be harmed and 50% would be helped.

While IRBs are unlikely to see a study this bizarre, they are likely to see studies that require some depth of analysis and, perhaps, an unexpected conclusion.

### **Next Month's Question**

You are a member of an IRB that is reviewing a study on the effectiveness of placebo "treatments." It is well known that different sizes, shapes and colors of pills cause different levels of the placebo effect, which also varies by the therapeutic indication and the country or culture. The investigators want to test the placebo effect across a broad range of diseases and countries. The placebo pill will be presented as a "booster" to their current treatment.... Will you vote to approve the study? Read the full question and give us *your* answer at: <https://www.surveymonkey.com/r/RBPF93N>.

### **Author**

Norman M. Goldfarb is Managing Director of First Clinical Research LLC, a provider of clinical research best practices information services. Contact him at 1.650.465.0119 or [ngoldfarb@firstclinical.com](mailto:ngoldfarb@firstclinical.com).