Experimental Study of Patient Information Prototypes

0910-Number

SUPPORTING STATEMENT

Submitted by

Office of Medical Policy
Center for Drug Evaluation and Research

Food and Drug Administration

B. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

1. Respondent Universe and Sampling Methods

For the second phase, the eligible study population is U.S., non-institutionalized adults age 18 and older. The selected sample will be drawn from Knowledge Network's Internet panel (KnowledgePanel) according to the specific research objectives for this project. The KnowledgePanel consists of 48,000 adult panel members who are systematically recruited by random-digit dialing (RDD) or by using address-based sampling. Households without existing Internet service are also eligible, and Knowledge Networks provides these members with laptops and Internet access to enable their participation.

The survey sample will be drawn from eligible members using an implicitly stratified systematic sample design based on the methodology for which Knowledge Networks was assigned a U.S. Patent (U.S. Patent No. 7,269,570) in September 2007. The selection methodology, which has been used by KN since 2000, assures that KN panel samples will closely track the U.S. population, and that survey panelists will not be over-burdened with survey requests. Typically, panel members receive 3-4 invitations per month to participate in research projects.

The sample will be drawn from KnowledgePanel members who report suffering from rheumatoid arthritis, ankylosing spondilitis, or plaque psoriasis and will be approximately evenly divided between men and women. The goal of the sample is to include 30% with lower literacy (within the limits of our panelists who must be able to read and write.)

KnowledgePanel consists of 48,000 adult panel members who are systematically recruited by random-digit dialing (RDD) or by using address-based sampling. The sample is nationally representative and statistically accurate. Typically, panel members receive 3-4

invitations per month to participate in research projects. The eligible study population is U.S., non-institutionalized adults age 18 and older. KnowledgePanel Members have been invited to take part in major national research efforts including surveys to provide feedback and opinions on a range of political, lifestyle, advertising and other questions, and may contribute other types of data along with other Panel Members.

The selected sample for Phase II will be drawn from KnowledgePanel according to the specific research objectives for this project. The survey sample will be drawn from eligible members using an implicitly stratified systematic sample design based on the methodology for which Knowledge Networks was assigned a U.S. Patent (U.S. Patent No. 7,269,570) in September 2007. The selection methodology, which has been used by KN since 2000, assures that KN panel samples will closely track the U.S. population, and that survey panelists will not be over-burdened with survey requests.

Should insufficient KnowledgePanel members be available to create a sample of adequate size, KN will obtain additional sample from a reputable off-panel vendor (e.g., e-Rewards) and will calibrate this additional sample using the data collected on KnowledgePanel members. Calibration is a weighting procedure where a sample composed of both KnowledgePanel cases and off-panel cases are blended together to approximate a sample that looks like a KnowledgePanel-only sample. The estimates obtained from a successfully blended calibration sample will not be statistically different from those obtained using just the KnowledgePanel cases because the blended sample is “calibrated” to the KnowledgePanel cases. The calibration process involves having the KnowledgePanel (KN) sample component of the larger study independently weighted to provide estimates for selected variables (precision will be low due to small sample size). The off-panel cases are then added to the weighted KN sample

and the now combined sample reweighted using the weighted KN sample as its benchmark. This combined, reweighted sample is the blended sample to be delivered to the client. Before the product is final, it is evaluated using auxiliary variables that are known to differentiate KN case from off-panel cases. Early adopter questions work well for this so they should be included in the questionnaire. In an iterative process, if necessary, one or more of these auxiliary questions will be used as an additional weighting variable to minimize any skew caused by the off-panel cases. However, we will try to use as much KnowledgePanel sample as possible and also minimize the use of off-panel sample, Calibration will limit the impact of the off-panel sample on the final weighted results.

The current sample design and sample sizes are:

Category	**Number of participants**
Pre-test	15-30
RA Patients Main Study (including control and electronic vs. hard copy administration)	1300*

*Includes 650 who will receive hard copy stimuli.

If sufficient sample can be drawn from KnowledgePanel, the results will be nationally representative of the population of people suffering from rheumatoid arthritis, ankylosing spondylitis, or plaque psoriasis. It will not be nationally representative of the entire population. This is due to the study design, not a limitation of the sampling frame.

The Agency does not intend to generate nationally representative results or precise estimates of population parameters from the experimental study. The study will use a convenience sample rather than a probability sample. Despite the attempt to match between the study's sample and the respondent universe in four demographic characteristics, matching is used solely to produce a sample with a reasonable degree of diversity in key demographic characteristics.

Rather, the strength of the experimental studies lies in its internal validity, on which meaningful estimates of differences across experimental conditions can be produced and generalized. As discussed in the following sections, the agency has taken commonly accepted measures to enhance internal validity of the study. Examples of these measures include random assignment of respondents and conditions, counterbalancing condition assignments within the sample, and use of comparison conditions and relevant covariates.

2. Procedures for the Collection of Information

Overview of Design

This examination of PMI formats will occur in two subsequent phases – a qualitative phase and a quantitative phase. This approach will allow us to capitalize on the strengths of each information-gathering method while minimizing the limitations. Together, these phases will provide a great amount of data that FDA can use to inform the decision about which, if any, prototype provides more accessible, usable information to patients receiving prescription drugs than the current system affords.

Phase I

Phase I consists of a series of qualitative one-hour interviews with individuals with and without the medical conditions of interest and with a range of health literacy levels. A total of 90 men and women will be recruited to participate in face-to-face interviews designed to investigate their perceptions and understanding of various presentations of format. This phase has three goals: 1) to obtain feedback from low literacy individuals who may not be accurately represented in the quantitative phase which will be administered via internet, 2) to obtain detailed feedback that would not be readily available in the later quantitative phase, and 3) to determine what type of font to use in the prototypes for the main study.

The literature is mixed regarding whether to use serif or san serif font in documents for the public.[1] Some research suggests that san serif font is easier to read, particularly in smaller font sizes, because it does not include additional features which may slow down poorer readers.[2] Other research suggests that serif fonts reduce eye strain when reading because they contribute to the flow of letters,[3] although this has been disputed by other researchers.[4] In any case, it appears that serif fonts are more familiar to individuals, perhaps leading to reports of preferences for serif fonts.[5] Although there is little consensus in the empirical literature, many low literacy publications have championed the use of serif fonts (e.g., Doak, Doak, & Root, 1996). Because the empirical evidence suggests overall that there are no substantial differences between serif and san serif fonts,[6] we will ask participants to view the same document in both fonts and report which they feel more comfortable with and prefer to read.

One limitation of the later quantitative phase is that we will not be able to obtain in-depth descriptions of why participants chose the answers they did or preferred one version over another. The qualitative phase will allow us to probe into the thinking of participants as they are reading through the prototypes. In addition, during the interview participants will see multiple versions of the prototypes, making them aware of choices and allowing them to report which appeal to them more. This phase will enable us to hear directly from participants who have a current need for prescription drug information and others who might use this type of document in

[1] Lund, O. (1995). In back and white: an R&D report on typography and legibility. Review article. *Information design journal, 8*, 91-95. See also www.alexpoole.info/academic/literaturereview.html#Zachrisson (last accessed September 24, 2010).
[2] E.g., Tinker, M.A. & Paterson, D.G. (1932). Studies of typographical factors influencing speed of reading: X. Style of typeface. *Journal of Applied Psychology, 16*, 605-613.
[3] DeLange, R.W., Esterhuizen, H.L., & Beatty, D. (1993). Performance differences between Times and Helvetica in a reading task. *Electronic Publishing, 6*, 241-248.
[4] Rayner, K., & Pollatsek, A. (1989). *The Psychology of Reading*. Englewood Cliffs: Prentice-Hall Inc., pp. 113-187; Reynolds, L. (1979). Legibility studies: Their relevance to present-day documentation methods. *Journal of Documentation, 35*, 307-340.
[5] Tinker, M.A. (1963). *Legibility of Print (3rd Ed.)*. Iowa: Iowa State University Press; Zachrisson, B. (1965). *Studies in the Legibility of Printed Text*. Stockholm: Almqvist & Wiksell.
[6] E.g., Moriarty, S., & Scheiner, E. (1984). A study of close-set type. *Journal of Applied Psychology, 69*, 700-702.

the future. Although we do not expect the prototypes to change substantially based on their extensive development process, which has included feedback and multiple revisions, this phase is essential to ensure that we have heard from actual patients who will use this information. This first phase will provide confidence that we have not neglected a key stakeholder in the development of the PMI.

The other main reason to conduct qualitative interviews is the limitations of internet administration in the second phase. Although our contractor maintains one of the strongest and most rigorous internet databases in the country, including the provision of equipment to low income individuals who otherwise do not have access to it, their panels still underrepresent individuals who cannot participate in computer-based exercises because they lack the literacy skills to participate. We need to hear from such individuals in order to assess their needs and whether the proposed prototypes meet them. Although it is possible that this written information will never capture the attention of very low literacy individuals, it may be that one or more prototypes addresses their needs better than others. We cannot assess this population over the internet. Thus, this face-to-face phase provides us an opportunity to reach this population.

Procedure. Participants will be invited to an interview facility to participate in an interview that will take approximately one hour. After reading and signing an informed consent form, they will answer questions from one interviewer regarding various forms of PMI. The interview guide is contained in Appendix B.

Participants. We will need to recruit patients for the formative and cognitive interviews phases of this research project. The research design requires 90 patients for the formative interview phase and 18 patients for the cognitive interview phase. For the formative interviews, we plan to conduct 30 interviews in each of the following cities: Chapel Hill, NC; Atlanta, GA;

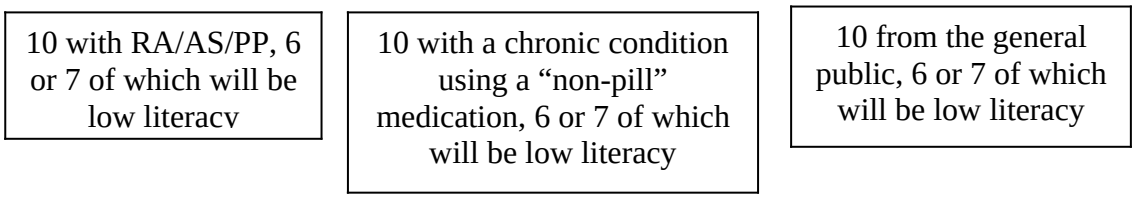
and Washington, DC. The formative interviews will be conducted in three subgroups of individuals; those with:

1. Rheumatoid arthritis, ankylosing spondylitis, or plaque psoriasis (RA/AS/PP);
2. A chronic disease requiring use of a "non-pill" formulation of a medication such as delivery via inhalation for asthma (long-acting corticosteroids such as fluticasone or budesonide) or injection for treating diabetes (insulin) or osteoporosis (ibandronate sodium or zoledronic acid);
3. No chronic disease, i.e., a general population group.

We have chosen these groups to provide a range from 1) those who might be extremely interested in Rheutopia and fairly knowledgeable, since Rheutopia is an amalgam of existing drugs in its class; to 2) those who might be interested in medical information but less familiar with the particular medical conditions or drug class from which Rheutopia was developed; to 3) those who have little familiarity with the medical conditions and drug class from which Rheutopia was developed but might someday require such medical information for themselves or someone they care for. Two-thirds of the participants in each subgroup will have low literacy (defined as reading at or below sixth grade reading level) as measured by the proxies of education, income, and information seeking.[7] Using the North Carolina site as an example, the completed (interviewed) cohort will look like the following:

30 patients recruited from NC

7 Hillard,J.H., Peter, E., Dixon, A., & Tusler, M. (2007). Consumer competencies and the use of comparative quality information: it isn't just about literacy. *Medical Care Research & Review (64)4,* 379-94.



Note that the above graphic shows only the completed number of formative interviews for each site. We anticipate having to identify and screen at least three times as many patients (RA/AS/PP and chronic conditions) and twice as many general population respondents to meet the requirement of low literacy.

Recruitment

The Contractor, RTI, will work with rheumatologists from three universities/hospital systems to identify patients with RA/AS/PP, as well as patients with chronic illness requiring use of a "non-pill" formulation of a medication: 1) Dr. Beth Jonas, University of North Carolina at Chapel Hill (UNC-CH), Rheumatology and RA Clinic; 2) Dr. Athan Tiliakos, Grady Hospital in Atlanta, GA, Rheumatology and RA Clinic; and 3) Dr. Raj Nair, Washington Hospital Center, Rheumatology Department. Participants will be recruited from patients receiving care at these three locations.

Responsibilities for each party are as follows:

1. UNC/Grady/Washington Hospital research coordinators will identify patients that would be eligible for the study (patients must have RA/AS/PP or a chronic illness requiring use of a "non-pill" medication). Participants will be told about the study during their appointments.

2. UNC/Grady/Washington Hospital research coordinators will screen interested participants for their treatment category and for low literacy requirements. Screener protocol will be provided by RTI.
3. UNC/Grady/Washington Hospital research coordinators will schedule participants and provide a location for interviews.
4. RTI will conduct interviews and provide incentive payments.

In order to further assist with recruiting of participants, RTI will also provide flyers to be made available in patient waiting areas. Flyers will contain details of the study and contact information for the recruitment firm staff in charge, so that individuals who are interested in participating can call the appropriate person directly. RTI will also provide the research coordinators with an interview reminder to be sent to participants a few days before the interview.

To recruit participants for the general population segment, we will retain the services of local recruiting firms in each of the cities we are collecting data: Raleigh-Durham, NC, Washington, DC, and Atlanta, GA. Recruiting firms will be asked to sign a confidentiality form and will utilize the same telephone screener described above. Interviewees will be paid a cash incentive of $75 (see section A.9.).

Cognitive Interviews

Once the formative research is complete, we will conduct 18 cognitive interviews (two rounds of nine cognitive interviews per round). All interviews will be conducted in North Carolina with patients with RA/AS/PP. One-third of the respondents will be low health literacy as described above. We will recruit these patients through our rheumatology contact at UNC-CH as well.

Phase II

The purpose of this study is to investigate the usefulness of two possible prototypes for patient medication information (PMI). In this phase, we will compare the two prototypes to each other and to the existing Medication Guide format using random assignment in order to obtain empirically based information about the most comprehensible and preferred document.

The quantitative phase of the study will occur via the internet. In this study, approximately 1,300 individuals who have been diagnosed with one of the medical conditions that the fictitious drug treats will answer questions about one of the two proposed prototypes or the existing Medication Guide format. Thus, we propose a 2 x [2 x 2 factorial plus 1] design, as demonstrated here:

Online administration:

2 x 2 + 1

		Format		
		Bubbles	OTC	
Context	Yes			+ Control (Med Guide)
	No			

Paper administration:

2 x 2 + 1

		Format		
		Bubbles	OTC	
Context	Yes			+ Control (Med Guide)
	No			

We will provide the prototypes to participants in one of two ways in order to investigate the role that the mode of administration will play in participant's comprehension of the information. Half of the participants will receive one prototype in the mail and will be able to view it much like they currently would if they received it from a pharmacy. The other half will see one prototype embedded within the web program. This split will allow us to explore whether viewing the prototype electronically or in hard copy influences the comprehension of the information in the prototype.[8] The internet administration design will allow us to record how much time participants take to read through the information and answer questions about it. This will provide us with a measure of cognitive effort required by each format.

Within each mode of administration, participants will see one of two proposed formats. The Bubbles version contains two columns of chunks of information separated by curved boxes. The OTC version resembles the format of current over-the-counter (OTC) drug labeling. These versions will either contain additional context in two sections ("Tell your doctor…" and "Call your doctor …") or not. The additional context provides explanation for selected information. For example, patients are instructed to call their doctor if they experience chills, swollen lymph nodes, night sweats, fever, or weight loss. This is all they are told in the "no-context" prototypes. In the "yes-context" prototypes, patients are also told, "You may have a higher chance of getting lymph node cancer." We will examine whether the additional information helps readers contextualize and remember the information, as suggested by early literature on learning theory,[9] or if it overloads participants with too much information, a suggested by more recent research on health literacy.[10]

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[8] This may have relevance for issues of dissemination in an age of rapidly changing technologies.

[9] See, for example, Pan, S. (1926). The influence of context upon learning and recall. *Journal of Experimental Psychology*, 9, 468–491.

[10] See, for example, Wilson, E. A. H., & Wolf, M. S. (2005). Working memory and the design of health materials: A cognitive factors perspective. *Journal of the Medical Library Association*, 93, 353–362.

In addition to the main 2 x 2 design for each mode of administration, some participants will be randomly assigned to see a Medication Guide for the fictitious drug (Rheutopia), which will serve as a control. If Rheutopia were a real drug, it would require such a document under current regulations. Thus, this represents a fair comparison for assessing the comprehension and understanding of the proposed prototypes.

Procedure. This study will be administered over the internet. A total of 1,300 experimental surveys will be completed. Participants will be randomly assigned to view one of the two proposed formats of PMI that do or do not contain extra context or a version mimicking the existing Medication Guide format. Following their perusal of this document, which will either be in hard copy or within the web program, they will answer questions about their comprehension of the information, their perceptions of the benefits and risks of the drug, and their intent to ask a doctor about the drug. Timing measures will be collected for the group that sees the prototype within the web program as a measure of processing effort.

Demographic and health care utilization information will be collected from all participants. The entire procedure is expected to last approximately 20-30 minutes. This will be a one-time (rather than annual) information collection.

Participants. Data will be collected using an Internet protocol. Please see section B.1 (Respondent Universe and Sampling Methods) for more detail on the data collection strategies. Participants will all have reported that a healthcare professional has diagnosed them with rheumatoid arthritis, ankylosing spondylitis, or plaque psoriasis. Approximately 30% of the sample will hold a high school diploma or less. Participants must be 18 years or older.

Analysis Plan

Independent Variables

• Administration (2 levels: online, paper)
• Format (2 levels: Bubbles, OTC) + Control (Medication Guide)
• Context (2 levels: Yes, No)

Dependent Variables

1. Six main risk comprehension points (analyze overall comprehension composite + individual components separately):

    a. Serious warnings (*Qs 14, 19, 22*)
    b. How to use it (*Qs 15-17*)
    c. What is it for (*Qs 1, 18*)
    d. Contraindications (*Q19*)
    e. Side Effects (*Qs 11-13, 20, 22*)
    f. Where to go for help (*Q21*)

2. Self-reported ease of understanding (*Q23-24*)
3. Time spent on comprehension measures (in online administration participants)
4. Perceived risk (*Qs 4-8*)
5. Behavioral intention (*Q 2*) (*specifically, intention to take: Q 2d*)

Secondary Dependent Variables:
1. Self-efficacy (*Q3*)
2. Perceived benefit (*Q9-10*)

Covariates

1. Objective health literacy (*Qs37-46*)
2. Subjective health literacy (*Qs 25-27*)
3. Severity of medical condition (*Q30*)
4. Knowledge of condition (*Qs 31-32*)
5. Educational level (*Q36*)
6. Race (*Q34*)
7. Gender (*Q35*)
8. Age (*in panel data*)

Hypotheses

Comprehension

Administration

1. Participants with lower subjective literacy, objective literacy, and education will show higher comprehension in paper administration as compared with online administration.

2. Administration x age: Older participants will show higher comprehension in paper administration than in online administration; younger participants may show no

difference or show higher comprehension in online administration compared with paper administration.

Format

3. Comprehension will be higher in Bubbles format than in Control.

4. Comprehension will be higher in OTC format than in Control.

5. Difference between Bubbles and OTC formats is exploratory.

6. Format x subjective literacy: High subjective literacy participants will show no difference between Bubbles, OTC, and control format; low subjective literacy participants will show higher comprehension in Bubbles and OTC formats.

7. Format x objective literacy: High objective literacy participants will show no difference between Bubbles, OTC, and control format; low objective literacy participants will show higher comprehension in Bubbles and OTC formats.

Context

8. Formats with extra context will result in overall better comprehension because participants can put the information into perspective.

OR

9. Formats with extra context will result in overall lower comprehension because the formats will be too cognitively dense and result in cognitive overload.

10. Context x subjective literacy: Participants with high levels of subjective literacy will show similar comprehension regardless of context; participants with low levels of subjective literacy will show greater comprehension in the no context conditions.

11. Context x objective literacy: Participants with high levels of objective literacy will show similar comprehension regardless of context; participants with low levels of objective literacy will show greater comprehension in the no context conditions.

Format x Context

12. This interaction is exploratory. One possibility is that comprehension will be similar in the Bubbles-no context condition and the OTC-no context condition; comprehension will be higher in the Bubbles-yes context condition than the OTC-yes context condition due to particulars of the formats.

Covariates

13. Higher objective and subjective literacy, more severe medical condition, greater knowledge of condition, and higher education level will be associated with greater comprehension.

Ease of Understanding

Administration

14. Participants with lower subjective literacy, objective literacy, and education will show higher ease of understanding in paper administration as compared with online administration.

15. Administration x age: Older participants will show higher ease of understanding in paper administration than in online administration; younger participants may show no difference or show higher ease of understanding in online administration compared with paper administration.

Format

16. Ease of understanding will be greater in Bubbles format than in Control.

17. Ease of understanding will be greater in OTC format than in Control.

18. Difference between Bubbles and OTC formats is exploratory.

Context

19. Participants will report that formats with extra context are easier to understand, perhaps because they provide extra information to put risks in place.

OR

20. Participants will report that formats with extra context are harder to understand, perhaps because they contain too much information too absorb at one sitting.

21. Context x subjective literacy: Participants with high levels of subjective literacy will show similar levels of understanding regardless of context; participants with low levels of subjective literacy will show greater levels of understanding in the no context conditions.

22. Context x objective literacy: Participants with high levels of objective literacy will show similar levels of understanding regardless of context; participants with low levels of objective literacy will show greater levels of understanding in the no context conditions.

Format x Context

23. This interaction is exploratory. One possibility is that ease of understanding will be similar in the Bubbles-no context condition and the OTC-no context condition; ease of understanding will be higher in the Bubbles-yes context condition than the OTC-yes context condition due to particulars of the formats.

Covariates

24. Higher objective and subjective literacy, more severe medical condition, greater knowledge of condition, and higher education level will be associated with greater ease of understanding.

Time Spent

Format

25. Participants will answer questions faster in Bubbles format than in Control.

26. Participants will answer questions faster in OTC format than in Control.

27. Difference between Bubbles and OTC formats is exploratory.

Context

28. Participants will spend more time reading formats that contain extra context.

Covariates

29. Higher objective and subjective literacy, more severe medical condition, greater knowledge of condition, and higher education level will be associated with faster responses.

Perceived Risk

Format

30. Perceived risk will be greater in Control than in Bubbles format.

31. Perceived risk will be greater in Control than in OTC format.

32. Difference between Bubbles and OTC formats is exploratory.

Context

33. Participants will report higher perceived risk when reading formats with extra context because the extra context provides bigger picture consequences, such as “cancer.”

34. The difference between the Control format and the context-yes formats is exploratory.

Behavioral Intention, Self-Efficacy, Perceived Benefit

These variables are exploratory.

Analyses

Several dependent variables are assessed by multiple-item measures. Cronbach's alpha will be calculated to determine which, if any, items can be combined. Where possible, multi-item scales will be constructed to test dependent variables.

For the six main risk comprehension points, a 2 x 2 x 2 Multivariate Analysis of Variance (MANOVA) will be conducted with format and context as the independent variables. We will also conduct this analysis with covariates included (MANCOVA; with objective and subjective health literacy, severity and knowledge of medical condition, gender, education, race, and age). If the overall comprehension composite holds together, we will also conduct a 2 (administration) x 2 (format) x 2 (context) ANOVA on the overall comprehension composite.

For each of the other dependent variables (behavioral intention, perceived risk, ease of understanding), we will conduct a 2 x 2 x 2 Analysis of Variance (ANOVA) with administration, format, and context as independent variables. We will also conduct these analyses with covariates (ANCOVA; objective and subjective health literacy, severity and knowledge of medical condition, education, race, gender, and age). If interaction effects are significant, we will conduct pairwise-comparisons to determine which conditions are significantly different from one another. Within the online administration only, time spent will be analyzed in a 2 (format) x 2 (context) ANOVA with and without covariates.

To test our hypotheses involving the control conditions we will conduct planned comparisons.

All data will be analyzed to determine if the statistical assumptions are met for each statistical test. If the assumptions are not met, the appropriate non-parametric test will be used.

Power

The following assumptions were made in deriving the sample size: (1) 0.05 alpha and 0.95 power and (2) a small effect size. The table below shows the sample size required to detect differences for interaction effects with effect sizes ranging from conventionally "small" (f = 0.1) trending in the direction of "medium" (f = 0.25). Main effects should be detectable within this sample size.

Table: A priori power analysis to determine sample size needed in F tests (ANCOVA: fixed effects, main effects, and interactions) to achieve power of 0.90 (Faul et al., 2007).[11]

		Effect size f*		
Input				
		0.10	0.12	0.15
	α error probability	0.05	0.05	0.05
	Power (1 – β error probability)	0.95	0.95	0.95
	Numerator df	1	1	1
	Number of groups	10	10	10
	Number of covariates	7	7	7
Output				
	Noncentrality parameter λ	13.02	13.03	13.05
	Critical F	3.85	3.85	3.86
	Denominator df	1,291	894	569
	Total sample size	**1,302**	**905**	**580**
	Actual power	0.95	0.95	0.95

*An effect size of 0.10 is traditionally considered small, whereas an effect size of 0.25 is considered medium (Cohen, 1988).[12] Here we have shown three different effect sizes including conventionally small toward conventionally medium effects to show that with our current sample size we will be able to detect fairly small effects.

[11] Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A, (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavor Research Methods, 39*, 175-191.
[12] Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd Ed). Hillsdale, NJ: Lawrence Erlbaum & Associates, Inc.

We will have 130 participants per cell, with a total of 1,300 participants in the 10 cells represented in the two [2 x 2 + 1] designs. The table shows that our sample size of 1,300 will be likely to detect effects as small as .10.

6. Methods to Maximize Response Rates and to Deal with Issues of Non-Response

This experimental study will use an existing Internet panel to draw a sample. The panel comprises individuals who share their opinions via the Internet regularly. The participation rate for similar studies is 65-70% percent without additional efforts to convert non-respondents. To help ensure that the participation rate is as high as possible, FDA will:

- Design an experimental protocol that minimizes burden (short in length, clearly written, and with appealing graphics);
- Administer the experiment over the Internet, allowing respondents to answer questions at a time and location of their choosing;

Knowledge Networks uses the following strategies to ensure a high response rate to the panel itself:

- Randomly sampled addresses are invited to join KnowledgePanel through a series of mailings (English and Spanish) and in some cases by telephone refusal conversion calls when a telephone number can be matched to the sampled address.
- Invited households are offered several options for response: They can join the panel by: completing and mailing back a paper form in a postage-paid envelope; by calling a toll-free hotline maintained by KN; or by going to a designated KN Web site and completing a recruitment form.

To ensure a high response rate to the individual survey:

Once the invitation to this survey has been e-mailed, Knowledge Networks will follow up with non-respondents with several e-mails, approximately every 3 days. For those who have not responded within about 6 days, as many as 50% of the original sample will also receive an automated phone call reminder.

7. Test Procedures

For each phase, the contractor will run nine participants through the procedure to assess question wording, basic glitches in the flow of the interview (phase I) or the programming and execution of the study (phase II). This pretest is designed to ensure that questionnaire wording is clear and that procedures for viewing stimuli and proceeding through the experiment are as planned. Then procedures will commence as described in their respective phases.

8. Individuals Involved in Statistical Consultation and Information Collection

The contractor, RTI International, will collect the information on behalf of FDA as a task order under the Quick-Turn-Around Research Services contract. Julia Kish-Doto, Ph.D., is the Project Director for this project, telephone (301) 468-8280 (x 8280). Data analysis will be conducted by RTI International and by members of the Division of Drug Marketing, Advertising, and Communications (DDMAC), Office of Medical Policy, CDER, FDA, coordinated by Amie C. O'Donoghue, Ph.D., 301-796-0574.

APPENDIX A

Expert Workshop: The Science of Communicating Medication Information to Consumers

List of external expert participants:

- **Wm. Ray Bullman**, Executive Vice President, National Council on Patient Information and Education
- **Baxter Byerly**, VP Information Technology, Catalina Health Resource
- **Thomas Cantu**, Senior Director, U.S. Regulatory Affairs, GlaxoSmithKline
- **Terry Davis**, Professor of Medicine and Pediatrics, Department of Medicine and Pediatrics, Louisiana State University Health Sciences Center
- **Angela Fagerlin**, Associate Professor, University of Michigan
- **Linda Golodner**, Principal at Consumer Initiatives
- **Sally Greenberg**, Executive Director, National Consumers League
- **Donna Horn**, Director, Patient Safety- Community Pharmacy, Institute for Safe Medication Practices
- **Nancy Hughes**, Assistant Vice President, Communications and Marketing, National Health Council
- **Jann Keenan**, President, The Keenan Group, Inc. and Founding Member, Clear Language Group
- **Art Levin**, Director, Center for Medical Consumers
- **Gerald McEvoy**, Assistant Vice President, Drug Information, American Society of Health-System Pharmacists
- **Ruth Parker**, Associate Professor of Medicine and Associate Director of Faculty, Development for the Division of General Medicine, Emory University School of Medicine
- **Kala Paul**, President, The Corvallis Group, LLC
- **Theo Raynor**, Professor of Pharmacy Practice, University of Leeds, and Executive Chairman of LUTO Research Ltd.
- **Dorothy Smith**, President & CEO, Consumer Health Information Corporation
- **Sue Stableford**, Director, Health Literacy Institute, Center for Health Policy, Planning, and Research, University of New England and Founding Member, Clear Language Group
- **Michael Wolf**, Associate Professor, Medicine and Learning Sciences and Associate Division Chief, Research, Division of General Internal Medicine, Feinberg School of Medicine, Northwestern University
- **H. Shonna Yin**, Assistant Professor of Pediatrics, Robert Wood Johnson Physician Faculty Scholar, Department of Pediatrics, NYU School of Medicine

APPENDIX B

Insert formative guide and quantitative questionnaire

APPENDIX C

Insert 60-day Federal Register notice.