



## Improving Pain Management in Cancer Care

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### Abbreviated Abstract

This project has focused on the development of HouseCalls, a scientifically based assessment and intervention program for people with cancer. HouseCalls will utilize the latest interactive voice response (IVR) technology so that patients can indicate pain and symptom levels in between office visits, as well as receive critical self-care information for common cancer-related problems. An administrative application will also be developed to allow oncologists and other office personnel to access customizable reports depicting patients' pain and symptom levels over time. The system is designed to address the increasing treatment of cancer on an outpatient basis, while also helping health care providers meet emerging guidelines that call for the "routinization" of pain and symptom assessments. The completed Phase II of this project will involve confirmation of the psychometric properties of all assessment modules proposed for the HouseCalls system, as well as production and testing of completed feedback and other patient support services.

### Primary Investigator

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### Research Team & Affiliations

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### Total Budget

\$962,395

### Research Objectives

#### AIMS

1. Development of an alpha version of My Check Up with Item Selection Study
2. Completion of the prototype system, including the development of the additional psychosocial content
3. A field trial to cross-validate the My Check Up items and test the psychosocial feedback
4. Usability and satisfaction study conducted with both participants and experts



## Theory/Hypothesis

An IVR system is a valid and reliable way of measuring and monitoring cancer symptoms. Psychosocial feedback provided by the IVR system will have an effect on the participants' pain and overall symptom distress over time.

## Experimental Design

Participants were given baseline assessments, instructed to use the HouseCalls system, and then asked to complete posttests. All participants were given the same baseline assessments, and follow-up assessments differed depending on the study into which the participant was placed. For the Item Selection Study, participants were randomized into two groups, either test-retest (participants were contacted 24 hours later and asked to repeat their initial baseline assessment battery in counterbalanced order) or sensitivity to change (participants were contacted 1 month after baseline and asked to repeat their initial assessment battery). For the Cross-Validation and Feedback Study (which was administered after the program was completed, using data collected in the Item Selection Study), participants were randomized into two groups, either test-retest (participants were asked to repeat the assessments between 3 and 24 hours following their baseline assessment) or sensitivity to change (participants were contacted 1 and 2 months after baseline and asked to repeat their initial assessment battery). The purpose of this field trial was both to test the final assessment items with a new sample and to get feedback on the impact of the psychosocial feedback portion of the system. The Satisfaction Study was implemented to assess the usability of and satisfaction with the completed HouseCalls system from the point of view of both participants with cancer and cancer health care providers. The participants from the Cross-Validation and Feedback Study were given satisfaction questionnaires to complete following the use of the IVR system at each assessment period. Twenty-four oncology health care professionals were recruited to review the HouseCalls provider procedures. This included reviewing a web-based administrative page to enter a mock patient for IVR assessment and reviewing the mock patient's IVR results over a web-based reporting feature.

## Final Sample Size & Study Demographics

**Item Selection Study:** Participants were 162 adults with cancer. The average age of the participants was 54.7 years (SD = 11.9, median = 54, range = 24 to 85). Approximately half (51%) of participants were women, and most were White (84.5%), with about 11% being African American and the remaining 4.5% being Hispanic, Asian, or of "other" race/ethnicity. The sample was relatively well-educated, with only 2% having less than a high school education and 17% having a high school degree only. Four cancer types were represented in the sample. These were breast (25.3%), prostate (26.0%), lung, (21.3), and colorectal (27.3%).

**Cross-Validation and Feedback Study:** One hundred sixty subjects were randomized to one of four groups. One hundred twelve were assigned to baseline assessments and follow-up assessments at 1 and 2 months. Of these, 56 each were assigned to the experimental condition (use of the HouseCalls program, including psychosocial feedback) and the control condition (no access to the HouseCalls program). Forty-eight subjects were randomized to receive a baseline assessment and re-test at 24 hours, with 21 assigned to the experimental condition and 28 to the control condition.

Thirty-five percent of subjects were male, 91% were White, 46% were under age 60 years, 34% were college graduates, 55% had an income over \$50,000, and 56% were married. Forty-four percent had breast cancer, 12% had colon cancer, 20% had lung cancer, and 24% had prostate cancer. The percentage of subjects assigned to each experimental group differed by education and type of cancer.

**Satisfaction Study:** Fifty-two participants from the experimental condition completed the satisfaction questionnaire. Forty-nine participants from the control condition completed the



satisfaction questionnaire. Twenty-four oncology health care professionals were recruited to review the HouseCalls provider procedures. Two-thirds of the health care providers were female. Eighty-seven percent identified themselves as White, with three professionals reporting that they were Asian. Fifty-four percent were nurses, 16% were medical doctors, 21% were pharmacists, and the remaining individuals were either social workers or psychologists. Half of the health care professionals described their primary work environment as being in a hospital. Twenty-five percent reported working in an outpatient environment.

## Data Collection Methods

Questionnaires

### Outcome Measures

Item Selection Study: HouseCalls IVR-based assessments; social desirability (measured with the Marlowe-Crowne Social Desirability Scale); clinical pain (measured with the Brief Pain Inventory); symptom distress (measured with the Rotterdam Symptom Checklist); and quality of life (measured with the Functional Assessment of Chronic Illness Therapy, which is cancer specific).

Cross-Validation and Feedback Study: Same as Item Selection Study.

Satisfaction Study: Program satisfaction.

### Evaluation Methods

Item Selection Study: Baseline and follow-up results were compared.

Cross-Validation and Feedback Study: Change scores from baseline to follow-up were compared for the experimental and control groups.

Satisfaction Study: Satisfaction rates were calculated.

### Research Results

Item Selection Study: Final selection of items for the final version was made by selecting those items with the best *balance* with respect to the following parameters: consistency, item social desirability, concurrent validity, test-retest reliability, bias examination, and sensitivity to change.

Cross-Validation and Feedback Study: There were no statistically significant differences in change in any of the scales between the experimental and control groups.

Satisfaction Study:

- For the subjects in the experimental group, the percentage satisfied with each item ranged from 15.4% to 81.3%. Two items demonstrated acceptable satisfaction: “wording clear” (80.8% at baseline assessment) and “all about pain module helpful” (81.3% at follow-up 2). For the control subjects, the percentage satisfied ranged from 30.6% to 82.5%. One item, “wording clear,” demonstrated acceptable satisfaction at follow-up 2 (82.5%). Overall satisfaction with the HouseCalls system ranged from 36% to 68%, depending on the study group and assessment time point. Responses to “Would you use the HouseCalls system if it was available for use?” also reflected much lower satisfaction than anticipated (48% to 62%).

The majority of the experts felt that instructions for setting up a patient to use the HouseCalls system were clear and easy to understand. Twenty-two of the health care providers felt that the instructions for creating a patient data report were also clear and easy to understand. Ninety-two percent of the providers felt that the data reports provided clinically useful information. Eighty percent of the providers reported overall satisfaction with the administrative pages. Only 54% of the experts stated that they would be likely to use the HouseCalls telephone system and administrative web site if it was made available to them. Thirty-eight percent of the health care providers said that they felt neutral about the system.



Conclusion: The field trials showed that reliable and valid health care information could be obtained using a telephone-based IVR system. The feedback study showed marginal influences of the psychosocial feedback modules on the overall pain and symptoms experienced by the cancer patients over time. While the validation of the IVR system for measuring pain and other cancer symptoms did occur during the Item Selection and Cross-Validation and Feedback Studies, perhaps one of the most striking results was the low satisfaction levels the participants reported in using the HouseCalls system. This is a very important finding. Because this IVR approach proved to be so unpopular with participants, it behooves us to consider other strategies to accomplish a similar outcome.

### **Barriers & Solutions**

Because recruitment took longer than we anticipated, we decided to reduce the total number of participants for the Cross-Validation and Feedback Study. In addition, the development of the IVR technology took longer than we initially thought, which resulted in a project delay.

### **Product(s) Developed from This Research**

HouseCalls IVR System