Implementing touch-screen technology to enhance recognition of distress

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Abstract

Objective: The University of California, San Diego, Moores Cancer Center implemented a systematic approach for patients to communicate with their health-care team in real-time regarding psychosocial problem-related distress using touch-screen technology. The purpose of this report is to describe our experience in implementing touch-screen problem-related distress screening as the standard of care for all outpatients in a health-care setting. Although early identification of distress has recently gained wide attention, the practical issues of implementing psychosocial screening with and without the use of technology have not been fully addressed or investigated.

Methods: ‘The How Can We Help You and Your Family?’ screening instrument was used to identify and address patient problem-related distress for clinical services, program development, research and education. Using a HIPPA-compliant approach, the touch-screen technology also helped to identify patients interested in clinical trials and additional support services.

Results: We found that the biggest barrier to implementing this technology was the attitude of the front desk staff (i.e. schedulers, clerks, administrative staff) who felt that the touch-screen would be burdensome. Our experience suggested that it was essential to actively involve these personnel from the beginning of the planning process. As specifically acknowledged in the recent 2007 Institute of Medicine report (Cancer Care for the Whole Patient: Meeting Psychosocial Health Needs. The National Academies Press: Washington, DC, 2007), use of this computerized version of the screening instrument was able to bridge the gap between the detection of problem-related distress and referrals for assessment or treatment.

Conclusion: We found that it is feasible to implement a computerized problem-related distress screening program in a comprehensive cancer center.

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Keywords: touch-screen technology; computerized; psycho-oncology; problem-related distress; cancer patients and psychosocial screening

Background/introduction

Automated methods for gathering patient self-report data are key to ensuring the overall efficiency and cost-effectiveness for psychosocial screening programs. In this report, we present the development and implementation of an automated program for problem-related distress in new cancer patients seen at the University of California, San Diego (UCSD), Moores Cancer Center.

Several studies suggest that electronic methods of data collection are easy, quick, reliable and acceptable to patients, all of which are important components for integration into routine oncology practice [1–5]. Innovative computer touch-screen technology is one of the more popular electronic methods, and its application to patient care is gaining attention within the health-care community [6,7]. Touch-screen technology is a keyboard-free interface where users can input data onto the computer screen using a pen or their fingers. Velikova et al. [2] find that the touch-screen is well accepted and provides good-quality data while minimizing missing responses and the need to decipher ambiguous data. In a recent study of 450 cancer patients, Allenby et al. [6] found that even though half of the patients report having no prior computer experience, 99% of them find the touch-screen easy to use.

A major advantage of the touch-screen technology, also reported in the literature, is that the results are readily available to generate reports for
immediate use by the medical staff [2,8,9]. The implication is that patients can receive immediate tailored assistance while saving staff time. A recent report by Taenzer et al. [3] on the use of an electronic quality of life (QOL) survey finds that electronic data collection is a simple, time-efficient and well-accepted method of improving patient—provider communication in a busy outpatient clinic. More specifically, this study reports that the computerized screening tool increased detection of QOL problems during clinic appointment times and indicates a trend toward a larger number of problems charted and addressed.

The early identification of patient problems is essential to relieve distress, prevent crises and minimize system disruption. Supported by the literature [10–13], the National Comprehensive Cancer Network (NCCN) recommends distress screening for all cancer patients to address problems before a crisis develops and necessitates intervention. Taking the lead from advances in pain management integration into standard medical care, Bultz et al. [14,15] have advocated that distress be designated as the Sixth Vital Sign.

In July 2005, the UCSD Moores Cancer Center, a National Cancer Institute-designated Comprehensive Center, began screening all outpatients before their first visit for problem-related distress as part of their standard clinical care. Based on 10 years of experience in cancer problem-related distress screening [16], we have developed a biopsychosocial screening instrument titled ‘How Can We Help You and Your Family?’ [17,18]. As the title demonstrates, this is a patient-centered process in which, by design, the direct benefits to the patient and family are immediately self-evident. Initially, a paper version of the questionnaire was used to help clinicians gain a better understanding of the type of biopsychosocial problems experienced by patients. Some of the major limitations of the paper version were that it was time-consuming for staff to enter, verify and interpret the data. The information was not consistently delivered to health-care team professionals in real-time for discussion during consultation. To address these concerns, in January 2007 a touch-screen version of this screening tool was implemented in both English and Spanish. The purpose of this paper is to describe the implementation of the touch-screen technology as an effective psychosocial screening tool with immediate clinical utility.

**Methods**

**Developmental phase**

The director of information technology, a social worker and a statistician worked closely with nurses, physicians, researchers, social workers and psychologists to develop the program content, design and hardware. This collaboration resulted in the touch-screen beta version of the ‘How Can We Help You and Your Family?’ instrument. This four-year prospective study was approved by the UCSD Institutional Review Board in 2005 (since screening was used as a standard of clinical care, patient consent was not required).

**Program content**

To convey to patients that the automated screening instrument was of immediate value to them, and not merely another hospital requirement without obvious benefits, a letter from the cancer center director was used as the first page on the touch-screen, to welcome them and to frame the screening process. The letter communicated to the patient how the screening process enabled them to be part of the health-care team and that this information would be helpful in planning their care and getting to know each patient as a whole person. The letter also informed patients that this information would be shared with the team. Finally, the introductory letter guided the patient in how to complete the touch-screen questionnaire.

After reviewing our existing databases including an earlier version of the ‘How Can We Help You and Your Family?’ [16] of close to 10,000 screened cancer patients, with a full range of diagnoses and demographics, and after completing a review of the literature, the team identified 36 key problem areas. The touch-screen content, in English and Spanish, included these initial 36 problems, as well as 5 additional problems (added because of a concurrent validation study in process), for a total of 41 problems. The 41-question screening instrument addresses physical, practical, social, psychological and spiritual problems (see Appendix A for a full list of the problem-related distress items). Patients are asked to rate the severity of each problem on a scale of 1–5 and to circle ‘Yes, would like to discuss items with a member of the staff’. We also collected two additional demographic variables (income and education level), and to understand the impact of changing from a paper instrument to a touch-screen format, we collected two computer-related items (computer ease of use and computer literacy). To offer all patients the opportunity to participate in clinical trials while respecting HIPPA privacy barriers, one question related to clinical trials was added. Patients were simply asked if they ‘Would like more information regarding clinical trials?’ Because the screening process used e-mail and paging to communicate patient responses, clinical trial coordinators were able to immediately go to the patient to explain their unique opportunities for clinical trials. Photographs of the clinical trial coordinators were positioned next to the question to further humanize the cancer experience.
Finally, to maximize the awareness of the patient and family education and psychosocial support programs, patients indicated whether they wanted to be contacted about future cancer center events. If willing to be contacted, the patients had the option of providing an e-mail or physical address. Similar to the clinical trials query, the opportunity for the patient to indicate a willingness to be contacted about the cancer center program was a HIPPA-compliant way to access patient information.

Program design

The touch-screen program was built using Active Server Pages with VBscript and JavaScript. In order to minimize missing data, a feature was built into the system such that the patient could only proceed to the next screen once every question had been answered. Additional response options were also added (‘prefer not to answer’ and ‘do not know’) so that patients did not feel forced to provide an answer for each and every question. Underrepresented populations were taken into account in the development of this program. For example, larger font was used for the elderly population, visual and audio cues were used to signal page changes and, as mentioned above, a Spanish version was also developed. Two questions were presented per page and patients entered their responses by either touching the screen or using a stylus to select the corresponding buttons on the screen.

Triage criteria were defined based on the experience of the clinical health-care team, as well as on previous data collected through the paper version of the ‘How Can We Help You and Your Family?’ instrument. Each of the listed problems was pre-coded to be electronically transmitted to a specific professional or resource in real-time, with a copy of the notification sent to the patient’s physician and nurse to ensure effective communication. Notification for intervention was triggered if a patient either ranked a problem ≥3 (1 = ‘not a problem at all’ and 5 = ‘very severe problem’) or circled ‘Yes, would like to discuss with a member of our staff’. The intervention encompassed a full range of support services, from information and education to psychiatric support, consistent with NCCN distress management guidelines [11]. To our knowledge, this is the only program that has fully implemented the distress management guidelines.

Patients’ responses triggered referral in approximately 77% of the population. Each problem was linked to the appropriate health-care team member for triage. For example, if a patient reported a pain distress level ≥4, this information was immediately sent to the nurse, doctor and social worker. The items ‘pain’ and ‘thoughts of ending my own life’ were flagged and considered as ‘hot buttons’ that required immediate attention from a health-care team member. Problems related to physical symptoms such as nausea and vomiting or recent weight loss were referred to a physician and/or nurse. Problems related to emotional, social and practical concerns such as feeling down, depressed or blue or feeling hopeless were triaged to a social worker. Each health-care team member was copied on all e-mails regarding the patient; this helped to ensure timely communication and clear delineation of responsibility for followup promoting continuity of care.

In mid-2007, after collecting six months of data via the touch-screen, the system was revised in a number of ways. Owing to false positives, attributed to anticipatory anxiety related to the first visit and before a treatment plan had been established, the screening was moved to the second oncology visit instead of the first. Additionally, the number of items was reduced to 39 and several items generated by the original committee were replaced with validated items from the literature (e.g. a validated two-item depression screen) [19,20]. Varying cut-off points were used to trigger referral. For example, a score of 2 was chosen for the item screening for suicidality, while a score of 4 was chosen for approximately 20% of the items for social work services. In the current system, the health-care professional referral was widened to include social workers, psychologists, nurse case management, chaplaincy, front desk staff and patient services representatives.

Hardware

Six IBM touch-screen tablet laptops with docking stations were placed at the front desk to ensure that laptops were always charged. Although initially there were concerns regarding laptop theft in this ‘public’ area, none were stolen. In communication with our other colleagues around the world who have used touch-screen technology extensively, none of them reported theft related to the laptops [21].

The touch-screen process

Figure 1 displays the touch-screen process. The cancer center had wireless Internet access, which made laptops a feasible option for the touch-screen program. Kiosks were not used due to lack of space and privacy concerns. Each patient checked in for their appointment with the front desk staff. Front desk teams were given laminated copies of a script to post on their computers. The script said, ‘We have a short questionnaire that we would like you to complete. By completing this form you will tell us how we can best work together with you as an effective team’. The front desk staff then identified the patient by their medical record number or their name.
and birth date in the web-based screening form. The patient was given a laptop with brief instructions and directed to find a comfortable place to sit and complete the screening instrument. The front desk staff was available to assist. After the instrument was revised in 2007, volunteers were trained to instruct patients in the use of the laptops, thus reducing the already minimal burden on front desk staff.

As previously mentioned, each problem was linked to the appropriate health-care team members. Thus, once criteria were met, an immediate report was generated listing all problems triggering referrals or requests to talk with the team. In the e-mail and printout, patient responses were categorized by the health-care team member responsible for action. For example, the physician received an e-mail in real-time listing all of the problem-related distress areas that required intervention, as well as a copy of the problem-related distress areas that required assistance from other health-care team members. A printout was also generated at the front desk and placed in the patient’s chart to initiate communication between the health-care team and the patient during their visit. If the patient requested additional information about clinical trials, a text message was sent to the appropriate clinical trials coordinator and the patient was then approached in the waiting room and given additional information about current clinical trials for which they qualified. Simultaneously, the raw data were sent to an Excel spreadsheet. These data were downloaded as needed by the statistician for research, dissemination and program development purposes.

Implementation phase

To ensure that the implementation of the touch-screen process went as smoothly as possible, a pilot test was conducted with 21 outpatients. The sample distribution was representative of the cancer center demographics (including five Hispanic patients to test the Spanish version). A research assistant was used for data collection. After completing the touch-screen version of the ‘How Can We Help You and Your Family?’ screening instrument, patients were interviewed and asked seven (two-part) questions [6] concerning time spent, clarity, readability and navigation. Overall, patients responded favorably to the touch-screen instrument (Table 1); however,
50% of the patients reported that they found something confusing about completing the questions. The patients were confused as they had to respond to each and every question and they did not feel that all of the questions were applicable. They felt trapped into responding to the questions asking if they wanted to discuss with a member of the team, even if they rated their problem-related distress as ‘not at all’ or ‘mild’. Thus, as mentioned previously, additional response options (‘prefer not to answer’ and ‘do not know’) were added to eliminate or reduce the confusion. Prior to the pilot study and after these response options were added, we did not receive any of the same negative feedback from patients completing the instrument. Patient feedback was taken into account and all of the necessary changes were made based on the results of the pilot test.

The initial rollout of the touch-screen started in the multi-specialty clinic and then expanded to the radiation oncology clinic. Although there was minimal initial resistance to the screening process by the physicians and nurses, our experiences clearly demonstrated that buy-in from the administrative personnel handing out and retrieving the instrument was critical and that they needed to be actively engaged. Table 2 lists the barriers and solutions found to implementing the touch-screen. Prior to implementation, marketing of the touch-screen to the health-care team was conducted through e-mails, presentations at relevant meetings and by word-of-mouth. Training sessions were conducted with the front desk staff to increase motivation. Formal breakfast and lunch-time training sessions included: a description of the project and background, a touch-screen demonstration, role playing, scripts and training manuals. Follow-up meetings with the health-care team were conducted to address any questions and concerns about the touch-screen process. Throughout the implementation phase, it was necessary to continually reinforce the importance of the touch-screen process for maximizing cancer patient care, as well as for discovery of new knowledge and the development of tailored programs. The overall cost of implementing this project (including equipment, programming and materials) was approximately $20,000 (not including the 6 laptops).

### Results

#### Patient acceptance of the touch-screen program

Based on the touch-screen data collected from the start of the program in January 2007 to June 2007, 1313 outpatients completed the touch-screen version of the ‘How Can We Help You and Your Family?’ screening instrument. This data sample was selected for the convenience of this

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**Table 1. Pilot study results (N = 21)**

<table>
<thead>
<tr>
<th>Pilot survey questions</th>
<th>Very easy (%)</th>
<th>Somewhat easy (%)</th>
<th>Somewhat difficult (%)</th>
<th>Very difficult (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How easy, or difficult was it to use the touch sensitive screen with stylus (pen)?</td>
<td>80</td>
<td>20</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>How easy, or difficult, were the instructions on how to answer the questions on the</td>
<td>89.5</td>
<td>10.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>touch screen?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How easy, or difficult, was it to read the questions on the screen?</td>
<td>78.9</td>
<td>15.8</td>
<td>5.3</td>
<td>0</td>
</tr>
<tr>
<td>How easy, difficult was it to navigate through the touch screen?</td>
<td>68.4</td>
<td>26.3</td>
<td>5.3</td>
<td>0</td>
</tr>
<tr>
<td>Did you find the amount of time spent to answer the questions acceptable?</td>
<td>100</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was anything about completing the questions confusing?</td>
<td>50</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you used a touch screen tablet computer before today?</td>
<td>38.6</td>
<td>63.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Patients felt that response options were too limiting.

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**Table 2. Barriers and solutions to touch-screen**

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front desk staff</td>
<td>Early buy-in, trainings, constant communication and education</td>
</tr>
<tr>
<td>Fear of added work</td>
<td></td>
</tr>
<tr>
<td>Psychosocial team as outsiders</td>
<td></td>
</tr>
<tr>
<td>Fear of change</td>
<td>Small reinforcements</td>
</tr>
<tr>
<td>Lack of communication skills to</td>
<td></td>
</tr>
<tr>
<td>describe instrument and</td>
<td></td>
</tr>
<tr>
<td>processes</td>
<td></td>
</tr>
<tr>
<td>Concerns about disrupting clinic</td>
<td></td>
</tr>
<tr>
<td>Do not see importance of</td>
<td></td>
</tr>
<tr>
<td>screening</td>
<td></td>
</tr>
<tr>
<td>Do not understand screening</td>
<td></td>
</tr>
<tr>
<td>Manifested latent resistance of</td>
<td></td>
</tr>
<tr>
<td>health-care professionals</td>
<td></td>
</tr>
<tr>
<td>Reject additional demands as a</td>
<td></td>
</tr>
<tr>
<td>result of pre-existing stress of</td>
<td></td>
</tr>
<tr>
<td>clinic</td>
<td></td>
</tr>
<tr>
<td>Age-related perceptions</td>
<td>Large font, visual and audio cues to indicate page change</td>
</tr>
<tr>
<td>Language</td>
<td>Available in other languages, English and Spanish, etc.</td>
</tr>
<tr>
<td>Health-care team</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Involve the health-care team in all phases of program development</td>
</tr>
<tr>
<td>Emotional content</td>
<td></td>
</tr>
<tr>
<td>Setup costs</td>
<td>Decrease in costs because of reduced staff needed for data entry,</td>
</tr>
<tr>
<td></td>
<td>verification and communication</td>
</tr>
</tbody>
</table>

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**Implementing touch-screen technology**

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study; ongoing data continue to be collected. Our data suggested that although over half of the patients (64.5%) rated themselves as beginner or intermediate level computer users, the majority (96%) rated that the instrument was very easy or easy to use, consistent with previous studies [6,22]. These results indicate that the feedback from the pilot study was adequately accounted for in the final program. The average amount of time to complete the survey was 6.31 min and none of the patients complained about the process. There were some concerns expressed by the front desk staff and by one faculty member regarding delays caused in the clinic. It was the policy of the project team to investigate all complaints and to address them immediately, at the time of the complaint. Upon review, all delays were found to be caused by extraneous processes (e.g. improper use and understanding of the laptops) and not by the touch-screen process itself. This information was immediately communicated by the director of the program to all the participants involved. There were two situations in which Spanish-speaking patients expressed that the language was not consistent with their particular dialect of Spanish. The challenge of creating an instrument that is able to meet the needs of all Spanish speakers has been reported by others [23].

**Patient responses on touch-screen**

Our patient population for this study was 62.9% female, likely due to the prominent breast cancer program. The average patient age was 54.9; 52.7% of our patients were married, 9.5% divorced, 6.9% widowed, 19.4% single and 4.7% living with a partner. Ethnicity was the characteristic for Southern California—65% Caucasian, 12% Hispanic, 7.2% Asian, 4.3% African American, 9.1% other; 27.7% of the patients completed some college, 26.2% completed beyond college, 19.8% college, 12.0% completed high school and 5.5% completed some high school.

Based on the percentage of patients who marked ≥3 (high distress) for a particular problem, the five most common causes of problem-related distress were: *fatigue* (30.9%), *sleeping* (28.1%), *pain* (27.2%), *finances* (26%) and *worry about the future* (25%). The five most common problems that patients selected ‘Yes’ they wanted to speak to a member of the health-care team were: understanding my treatment options (33.9%), side-effects of treatments (29.8%), pain (28.7%) *fatigue* (26.3%) and *feeling anxious or fearful* (23%). Problems related to *worry about the future* and *fatigue* are in the top five for both high distress and wanting to speak with a member of the health-care team. However, understanding my treatment options, side-effects of treatments and *feeling anxious or fearful* were among the most common five problems that patients wanted to speak to a member of the health-care team about but were not the most distressed about.

Although the five most common problems that patients rated ≥3 were the same for both the paper and pencil version [17] and the touch-screen version, more patients rated each of the five problems ≥3 on the paper and pencil version than on the touch-screen version. In terms of the top five problems that patients said they wanted to talk to a member of the health-care team, there were differences in the frequency of ‘Yes’ responses. Patients asked for help more frequently on the top five problems using the touch-screen version. Problems with *understanding my treatment options* was the most common problem where patients wanted to speak with a member of the health-care team about for both the pencil and paper and touch-screen versions.

**Discussion**

Because screening for distress is a relatively new process, the data to support outcomes are yet to be established. In addition, it should be noted that currently there are no data to support the reliability or validity of the presented screening instrument. However, our clinical experience has demonstrated several important benefits of the touch-screen for patients, staff and the institution (Table 3). One potential benefit found was that the touch-screen version of the ‘How Can We Help You and Your Family?’ instrument improved the communication between the patient and the health-care team, serving as an avenue to open the lines of communication, as well as providing a common language. The system also created an opportunity for the patient to have a better understanding of his or her current health condition and of the possible forms of treatments and services available. This enhanced communication may have helped to reduce patient concerns and enhance perception of being heard and understood.

In our experience additional benefits of the touch-screen were that the health-care and research teams were able to: (1) quickly and efficiently screen all cancer patients, (2) provide immediate information at clinic visits, (3) better tailor treatment to the specific needs of cancer patients, (4) make referrals in real-time, (5) develop new knowledge for research efforts and (6) help in recruitment for clinical trials. Since the start of touch-screen implementation, accrual for one particular clinical trial doubled. The touch-screen program asked *every* patient if they wanted additional information about clinical trials, compared with previous recruitment methods, which were sporadic and unreliable.
Implementing touch-screen technology

The touch-screen technology minimized the need for administrative staff to process paperwork, which in turn reduced costs and data entry errors. Since the touch-screen data were linked to the patient medical record database, the patient data entry burden was decreased because basic demographic information had been collected prior to the patient’s first visit, thus allowing fields such as gender and date of birth to pre-populate into the survey. In addition, this connection to the medical record allowed the data to be linked to stage, diagnosis and treatment data, which eventually became part of the medical record.

Table 3. Potential benefits of touch-screen to patients, staff and the institution

<table>
<thead>
<tr>
<th>Patients</th>
<th>Staff</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active and early engagement as part of the health-care team; communicates compassionately in patient-centered language</td>
<td>Patients as an active partner in their own health care by communicative problem solving</td>
<td>JCAHO requirements for identification of psychosocial concerns; quality care</td>
</tr>
<tr>
<td>Timely referral to supportive services</td>
<td>Address problems before distress is unmanageable and disruptive</td>
<td>Patient satisfaction for benchmarking; appropriate and efficient use of resources; minimizes disruption of processes; quality care; fewer complaints</td>
</tr>
<tr>
<td>Personal and immediate needs identified, resulting in tailored support services; education and information</td>
<td>The right person in the right place at the right time</td>
<td>Staff efficiency by reducing duplication of resources; quality care</td>
</tr>
<tr>
<td>Satisfaction by feeling heard and understood</td>
<td>Working with grateful patients</td>
<td>Competitiveness in the marketplace; patient satisfaction; potential for grateful patient donations</td>
</tr>
<tr>
<td>Ease of data entry</td>
<td>Reduce data entry and verification burden</td>
<td>Reduce administrative costs; data quality</td>
</tr>
<tr>
<td>User-friendly</td>
<td>Less time explaining process and procedures and answering questions</td>
<td>Reduce administrative costs</td>
</tr>
<tr>
<td>Tailored resources immediately provided</td>
<td>Streamline referral process to appropriate resources</td>
<td>Screens for biopsychosocial problems and addresses them; meets every new patient’s needs</td>
</tr>
<tr>
<td>More productive use of waiting time</td>
<td>Improves continuity of care and communication</td>
<td>Solves problems</td>
</tr>
<tr>
<td>Improves continuity of care</td>
<td>Provides data for grants; publications and programs; quick and efficient screening of all cancer patients</td>
<td>Increase accrual rates to clinical trials; reliable; quick and efficient data entry</td>
</tr>
<tr>
<td>Immediate report printed out to take home (of results and resources)</td>
<td>More efficient data interpretation—computer calculates responses</td>
<td>Model for other institutions</td>
</tr>
</tbody>
</table>

Conclusions and future directions

This touch-screen model can be applied to other types of research or programs and can be easily adapted to other cancer centers. Currently, at the UCSD Moores Cancer Center the touch-screen program continues to be successful in both the multi-speciality and radiation oncology clinics. Future plans at the UCSD Moores Cancer Center have been made to expand the touch-screen program to the infusion clinic.

Currently, two of the authors are pilot testing an adapted paper and pencil version of the ‘How Can We Help You and Your Family?’ screening form in several outpatient clinics at the City of Hope Medical Center. The paper and pencil version is currently being converted to touch-screen with the new name ‘You, Your Family and City of Hope’.

In addition, new ways to bring people closer together utilizing the most recent technological advances (i.e. cell phones and handhelds) will continue to be implemented and studied. Moving from automated screening to computerized full assessments of both patients and caregivers is the next logical step of this program and is currently in process at City of Hope. Future use of technology will help to bridge the gap between detection of
problem-related distress and referrals for assessment or treatment, creating proactive approach to whole-person-centered care.

Acknowledgements

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Appendix A: problem-related distress items included in the touch-screen

1. Ability to have children.
2. Becoming too ill to communicate my choices about medical care.
3. Being isolated, alone or abandoned.
4. Being unable to take care of myself.
5. Bowel movement/constipation.
6. Fatigue (feeling tired).
7. Fear of medical procedures (needles, enclosed places, surgery).
8. Feeling anxious or fearful.
11. Feeling irritable or angry.
12. Finances.
13. Finding community resources near where I live.
15. Health insurance.
16. How my family will cope.
17. Losing control of things that matter to me.
18. Managing my emotions.
19. Managing work, school, home life.
20. My ability to cope.
22. Needing help coordinating my medical care.
23. Needing practical help at home.
25. Questions and fear about end of life.
26. Recent weight change.
27. Sexual function.
28. Side-effects of treatments.
29. Sleeping.
30. Solving problems due to my illness.
31. Someone else dependent on me for their care.
32. Spiritual or religious concerns.
33. Substance abuse (drugs, alcohol, nicotine, medications, other).
34. Talking with doctor.
35. Talking with family, children, friends.
36. Talking with the health care team.
37. Thinking clearly.
38. Thoughts of ending my own life.
39. Transportation.
40. Understanding my treatment options.
41. Worry about the future.

References


