SMS to Promote Risk-Based Late Effect Screenings? A Technical Pilot for Young Adult Cancer Survivors

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INTRODUCTION

Young adult cancer survivors are at risk for early morbidities and mortality due to cancer treatment and/or the cancer. Late effect screenings are recommended to screen for, prevent, and treat health problems. However, most young adults are not receiving recommended risked-based screenings. The specific aims for this study were:

1. To design a technical platform to promote risked-based late effect screenings among young adult cancer survivors given their risk for developing medical late effects.
2. To explore the acceptability of text messaging as a tool to improve young adult cancer survivors’ awareness and involvement in their survivorship care.

METHODS

1. Develop RapidSMS Framework:
   - We built an application within the RapidSMS framework for automated SMS-based reminders to be easily used by:
     - Clinicians (MDs, NPs) to specify reminders and view patient interaction
     - Young adults to interact with the automated messaging system

2. Alpha Test RapidSMS System:
   - 10 research team members initially tested the system to identify and resolve system glitches.
   - 6 young adults cared for at the UCLA-LIVE/STRONG Survivorship Center of Excellence participated after their clinic visit, which provided recommended late effects screening.

Eligibility criteria:
- Young adult cancer survivor aged 18 - 39
- Off active cancer therapy at least 1 year
- Has a cell phone with SMS capabilities
- Needs to complete at least one late effect screening within 3 months, including:
  1. Blood labs
  2. Cardiology test - ECHO
  3. Cardiology test - EKG
  4. Cardiology appointment
  5. DEXA bone density scan

3. Determine Acceptability & Usability of RapidSMS System:
   - At the completion of the SMS-based reminders, each participant completed an in-depth interview by phone on the acceptability and usability of the system.

RESULTS

RapidSMS Framework:
   - Development team met frequently with clinicians to draft and then refine the flow of interactions with the user and the specific messages exchanged.
   - The Scheduled Task Manager is comprised of 3 main components, all of which are involved in the life cycle of a task:
     - The scheduler, which ensures that tasks run at the appropriate times.
     - The task manager, which handles the mechanics of instantiating tasks and interacting with the patient.

   - The clinician web interface, a graphical interface centered on the management of patients and tasks. It leverages the capabilities of Django’s object-relational model and templating system.

   - Alpha Testing of RapidSMS System:
     - 15 research team members tested the system to identify and resolve system glitches before the SMS-based reminders were sent to the research participants.
     - Each major change to the system prompted first a demonstration to the clinicians, and then a testing period, during which the system was held in a constant state in order to protect the integrity of the data collected during the test.
     - Issues and improvements were documented and discussed in meetings leading up to the next implementation cycle.

   - Six young adult cancer survivors alpha tested the automated SMS-based reminder system following a survivorship clinic visit:
     - Average age at time of participation: 26.5 yrs ± 7.4
     - Years since completion of treatment: 11.9 yrs ± 6.7

Example of User and RapidSMS System Interface:

Acceptability & Usability of RapidSMS System:

   - The qualitative data from the in-depth interviews demonstrated that the SMS reminder system was acceptable:
     - Helpful to complete their late effects screenings
       “Nice to have a reminder. You can lose notes so it is nice to have a backup in a separate place.”
     - A useful tool to interact with their survivorship health care team
     - An efficient mode to receive quick responses to their questions
     - Polite nagging needed to schedule and complete their late effects screenings
       “Just the little extra nagging was helpful to schedule my appointment.”

   - 83% (5/6) of the participants scheduled and completed their late effects screenings.

CONCLUSIONS

• The long-term health outcomes are projected to worsen for young adult cancer survivors diagnosed each year if health promotion interventions are not developed to address the low rates of recommended late effect screenings.
• We believe this innovative intervention for young adult cancer survivors will encourage late effect screenings by notifying them of required checkups, tests, and other such appointments; providing timely reminders of the appointments; and providing a mechanism by which the patients can supply feedback about their experiences with the appointment and with care in general.
• This pilot study demonstrates that automated SMS-based reminders are an accepted mode of health care communication to promote risk-based late effects screenings for young adult cancer survivors.
• The automated SMS-based reminders also encourages agency in the patient by putting tools in the hands of patients to communicate with care providers and to be kept aware of their required screenings.

FUTURE DIRECTIONS

• As smart phones become more affordable, its reach among the young adult population will increase from 30% who currently own one.
• We are exploring the use of a new SMS/mobile app framework that will automate text messages through a mobile to web platform to record, analyze, and show the data between the user and the device they are using.
• Such new technology can allow for post-treatment care support and data collection for survivors to prevent late effects, manage health problems, and promote healthy behaviors.
• We plan to further test this current and improved technology among a larger, diverse group of young adult cancer survivors.

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