A Digital Support Device Designed to Help Family Caregivers Coordinate, Communicate and Plan the Care of People with Brain Injury

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Abstract

This poster reports on the design concepts of a digital support device to help family caregivers coordinate care of people with brain injury. Using a user-centered design methodology[1], we designed a device with the following requirements: centrally located in the home; speeds up appointment decisions; simplifies communication processes; improves access to community resources; involves care-recipients in the care; and adapts to changing support needs.

Purpose

Family caregivers often need to coordinate many family members or professional help to give care to ABI survivors. The project purpose was to design a digital support device to enhance primary caregiver's capacity to plan and coordinate daily care. This poster reports on early design activities and describes design evolutions with respect to functional, interaction and usability dimensions.

Methodology

The care coordination needs of three family caregivers were assessed using an interview. Stakeholder analysis, artifact analysis, theme identification, and requirement analysis were conducted. Two scenarios, prototypes and storyboards were created. Two case managers and two caregivers participated in usability tests. The results were used to evaluate our design against their expertise in the domain, validate a number of design choices, and determine improvement needs.

Results

After the rigorous evaluation and analysis procedures, six important design decisions were made.

First, our interviews suggested a significant portion of the coordination took place in the home, especially in kitchens and other common areas. The device was designed to be installed in a common area at home, with limited, in-home portability as a secondary support feature.

Second, before assigning a helper at a certain time, a primary caregiver must know who is available, when they are available, if they are willing to give care, and so on. To allow the caregiver to make quicker and more workable decisions, the device added a display of helpers' availability and the functionality for timely communications with other helpers.

Third, coordinating care requires more than just dates and times. In addition to a calendar, a whiteboard was included to allow caregivers to communicate casually. It simulates the physical whiteboards caregivers use, often directly placed next to the family calendar.
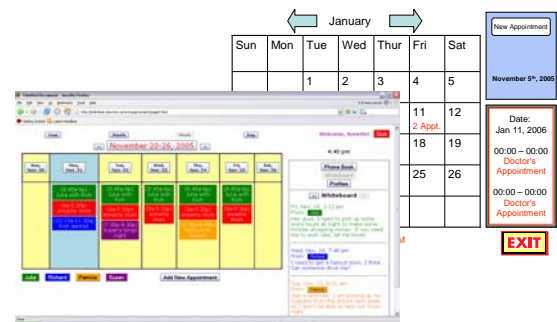

Figure 1: Screenshots of two prototypes.

Fourth, caregivers depend heavily on health and community services. They kept a physical phone book with their own collection of contact information. The new design included an electronic phone book that supports the upload of local resources.

Fifth, care recipients also played a crucial role in coordinating, communicating, and planning care. Because they often have cognitive and/or physical impairments, the interaction style of the device was redesigned to favor alternative modalities, i.e., speech recognition, large screen displays, handwriting recognition, and touch screens.

Sixth, a useful device is one that can "adapt" to user groups who have different usability and functional needs. Therefore, dynamic profiling was introduced to enable different users to specify which functions and interaction styles they preferred.

Conclusion

Caregivers of ABI survivors can benefit from innovative designs of digital support devices. This poster contributes the findings of preliminary design concepts that were perceived as useful and usable for family caregivers to plan, coordinate and communicate daily care needs.

Reference:
1. Baecker R, Grudin J, Buxton W, Greenberg S. Design and Evaluation. In Readings in Human-Computer Interaction: Towards the Year 2000. Morgan Kaufmann; 1995. p.73-91