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Re-Mission™ Outcomes Study: A Research Trial of a Video Game Shows Improvement in Health-Related Outcomes for Young People with Cancer

HopeLab is a non-profit organization dedicated to combining rigorous research with innovative solutions to improve the health and quality of life of young people with chronic illness. A review of available research suggested that it might be possible to harness the power and appeal of video game technology to fully engage young people with cancer. HopeLab consulted oncologists, epidemiologists, cell biologists, behavioral psychologists and video game producers, as well as young people with cancer themselves, to identify critical issues in using video games to impact health outcomes.

Development of the Game

HopeLab adopted an interactive game development process to incorporate the input of young people with cancer, as well as our scientific objectives into game design. We worked with healthcare professionals to ensure that the medical terminology in the game was accurate, and that the goals of each mission represented medically valid problems. We consulted young people with cancer throughout the development process to ensure that the game would meaningfully reflect their perspectives. Patients consistently emphasized that the game should be realistic and fun. The result was Re-Mission™, a 20 level, 3rd person shooter video game in which players pilot a nanobot, Roxxi, through the body of fictional cancer patients to destroy cancer cells, defend against bacterial infections and grapple with often life-threatening side effects.

The Research Study

HopeLab conducted a randomized, controlled, multi-center trial to test the effect of Re-Mission on adolescents and young adults with cancer. The trial focused on

- Adherence to cancer medications
- Knowledge about cancer information embedded within the game
- Quality of life
- Self-efficacy¹

375 male and female cancer patients aged 13-29 were enrolled at 34 medical centers in the US, Canada and Australia, and randomly assigned to receive PCs pre-loaded with a popular video game only or that same control video game plus Re-Mission.

¹ Self-efficacy is defined here as an individual's belief in his or her ability to take a certain course of action in a challenging situation.

Study Results

Adherence, cancer-related knowledge, quality of life, and self-efficacy were assessed at baseline and at one and three months after game delivery. More than 80% of patients eligible to play Re-Mission did so.

- Patients' quality of life, knowledge about cancer information embedded with the game, and their self-efficacy to communicate about cancer and manage side effects increased in the Re-Mission group.
- Patients' overall composite score on the self-efficacy scale also increased over time for the Re-Mission group.
- Young people who played Re-Mission maintained higher blood levels of chemotherapy and showed higher rates of antibiotic utilization, both suggesting that Re-Mission helps patients adhere to cancer therapy regimens.

Conclusions

These data, which were first announced in March of 2006 at the Annual Meeting of the Society of Behavioral Medicine held in San Francisco and the International Conference on Teenage and Young Adult Cancer Medicine (Teen Trust) in London, show that a theory-based, data-driven intervention delivered in an appealing interactive videogame context can produce significant increases in cancer-related knowledge and self-efficacy for young people with cancer.

To our knowledge, this is the first randomized, controlled, multi-center trial designed specifically for adolescents and young adults with cancer. It is also the first multi-center randomized trial of a video game for this vulnerable population. The process by which the game was developed and tested, as well as the research findings, has practical application for the development and testing of other serious games and/or other technology-based approaches to helping young people with chronic illness.

