



Serious Game Case Study

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A little bit about me....



- Harvard and Stanford trained Health Psychologist



- Founding President and CEO of HopeLab



- Current Owner of P. M. Kato Consulting, helping organizations develop effective serious games and gamification approaches for health

Healthcare Challenges

- Acute Care Model → Chronic Care Model
 - Chronic diseases
 - Aging population
 - Prevention
 - Medical Errors



Behavioral Challenges



- Effective treatments have no impact on health outcomes if people fail to use them
- There are no immediate rewards for engaging in positive health behaviors/safe medical practices
- It's not "cool" to have a chronic disease or to follow all the rules

Serious Games for Health



- Games can help address these challenges!

Case Study: Re-Mission



HOPELAB®

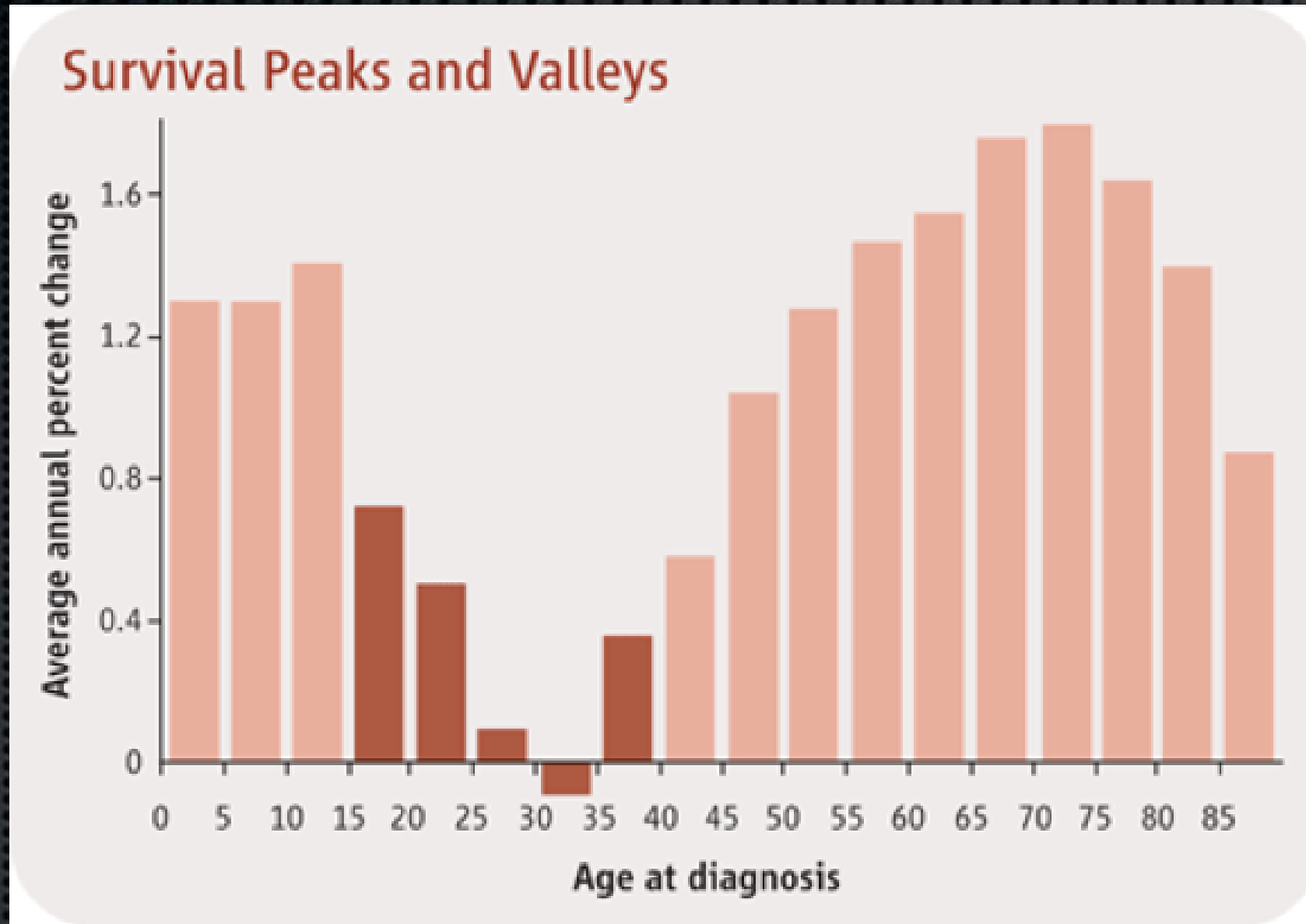
Outcomes

- It worked! Randomized trial published in *Pediatrics*
- Over 200,000 copies distributed in 81 countries
- There is still interest in this “old” game (2005)
 - *2012 Wall Street Journal* interview

Why still popular?

- It addressed an unmet need in the global market: psychosocial support for teens with cancer
- We did our homework with end-users, stakeholders, gatekeepers
- Easily accessible distribution channel: mail order or download
- Reasonably priced: Free to patients with cancer, \$20 donation for others
- Endurance and ubiquity of PC platform

Problem: Adherence



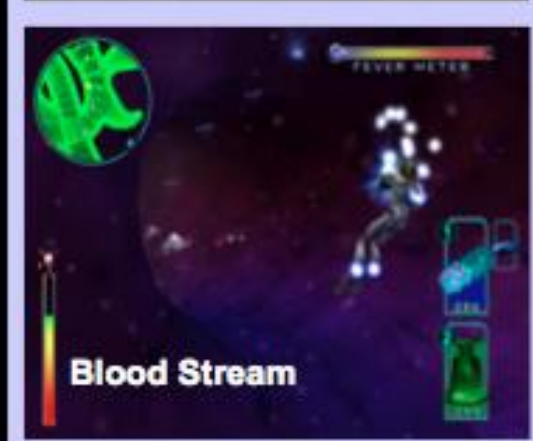
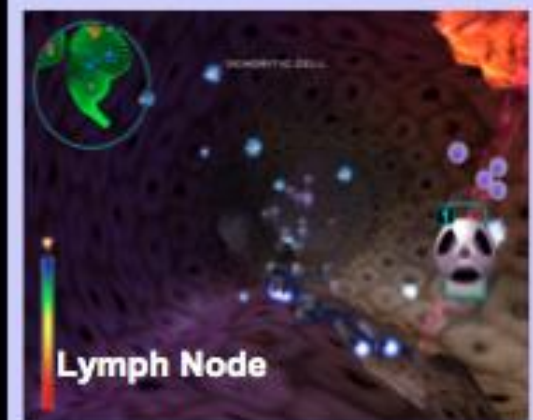
- Adolescents and young adults were not benefitting from effective cancer treatments (Archie Blyer)

Preliminary research

- Focus groups and interviews with patients, family members, nurses, doctors
- Formal surveys and reviews
 - Baggott, C., Beale, I.L., Dodd, M.J., & Kato, P.M. (2004). A survey of self-care and dependent-care advice given by pediatric oncology nurses. *Journal of Pediatric Oncology Nursing*, 21(4), 214-222.
 - Bradlyn, A.S., Kato, P.M., Beale, I.L., & Cole, S. (2004). Pediatric oncology professionals' perceptions of information needs of adolescent patients with cancer. *Journal of Pediatric Oncology Nursing*, 21(6), 335-342.
 - Beale, I.L., Bradlyn, A.S., & Kato, P.M. (2003). Psychoeducational interventions with pediatric cancer patients: Part II. Effects of knowledge and skills training on health-related attitudes and behavior. *Journal of Child and Family Studies*, 20(4), 385-397.
 - Bradlyn, A.S., Beale, I.L., & Kato, P.M. (2003). Psychoeducational interventions with pediatric cancer patients: Part I. Patient information and knowledge. *Journal of Child and Family Studies*, 12, 257-277.
 - Suzuki, L., & Kato, P.M. (2003). Psychosocial support for patients with pediatric cancer: The influences of parents, schools, peers, and technology. *Journal of Pediatric Oncology Nursing*, 20, 159-174.

Active ingredients

- Theory to support behavior change
 - Social Learning Theory
- Identified specific behaviors and knowledge targets where we could have a significant impact
 - Adherence, self-care, stigmatized conditions
- Ongoing input from target group of patients



**Re-Mission
7 Cancers**

- ALL
- AML
- Osteosarcoma
- Brain tumor
- Hodgkin's
- Non-Hodgkin's
- Ewing's Sarcoma

19 Patients

Diverse:

- Gender
- Ethnicity
- Age
- Location
- Disease stage

20 Levels

Adaptive difficulty
Diverse missions:

- Chemotherapy
- Radiation
- Metastasis ctrl.
- Infection ctrl.
- Stress mgmt.
- Pain mgmt.
- Bonus: immunotherapy

1 Intrepid Nanobot

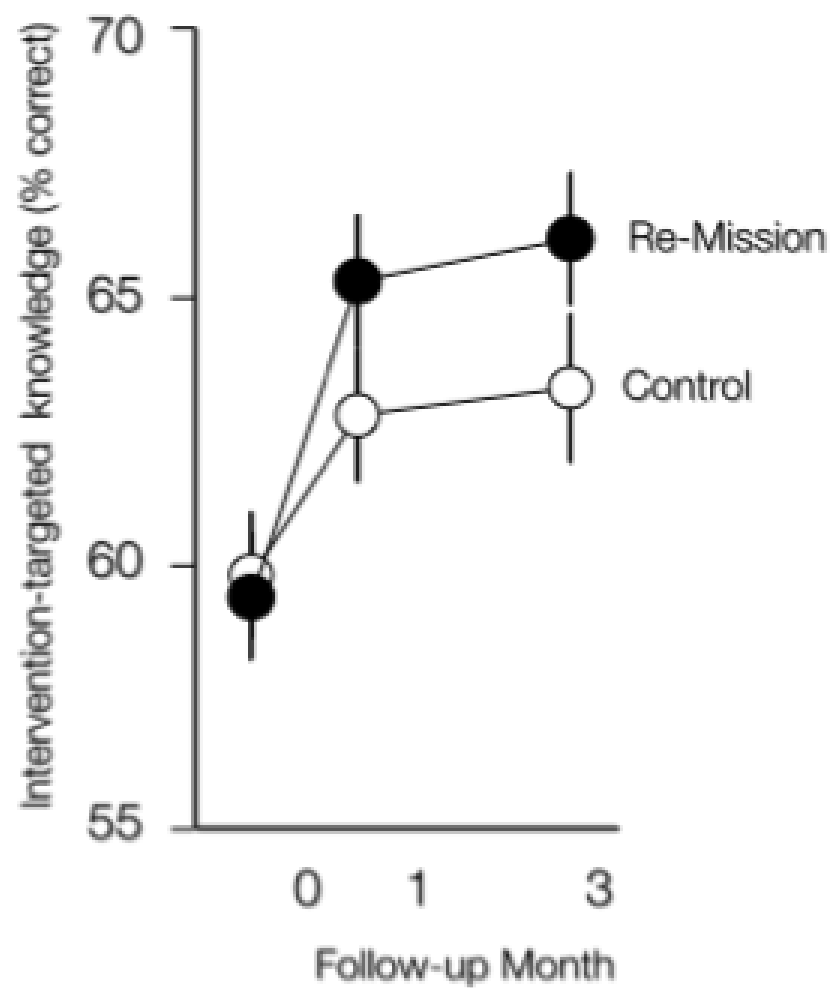
Randomized Trial to Determine Effectiveness

- n=374 young people with cancer, ages 12 - 29
- 34 medical centers
- Design: Control game vs. Control game + Re-Mission
- Primary outcome = Adherence to treatment

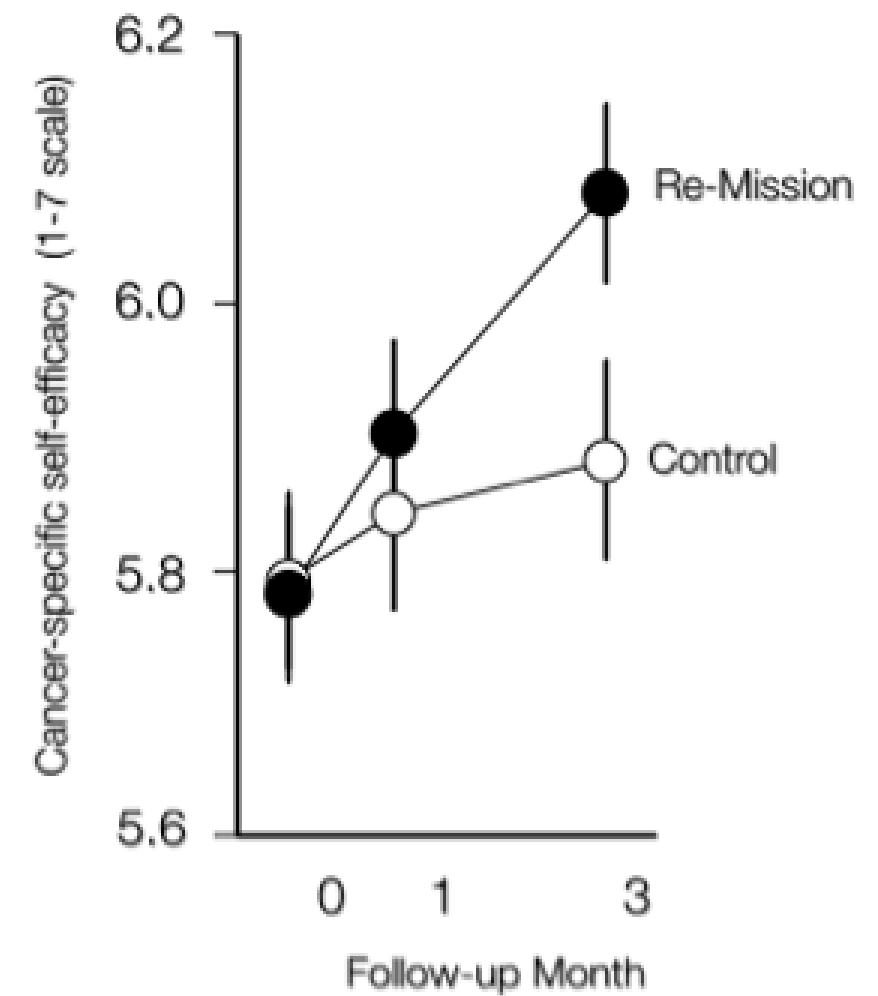
*(note: We also had a **Data Safety and Monitoring Board (DSMB)** to evaluate safety*

Results

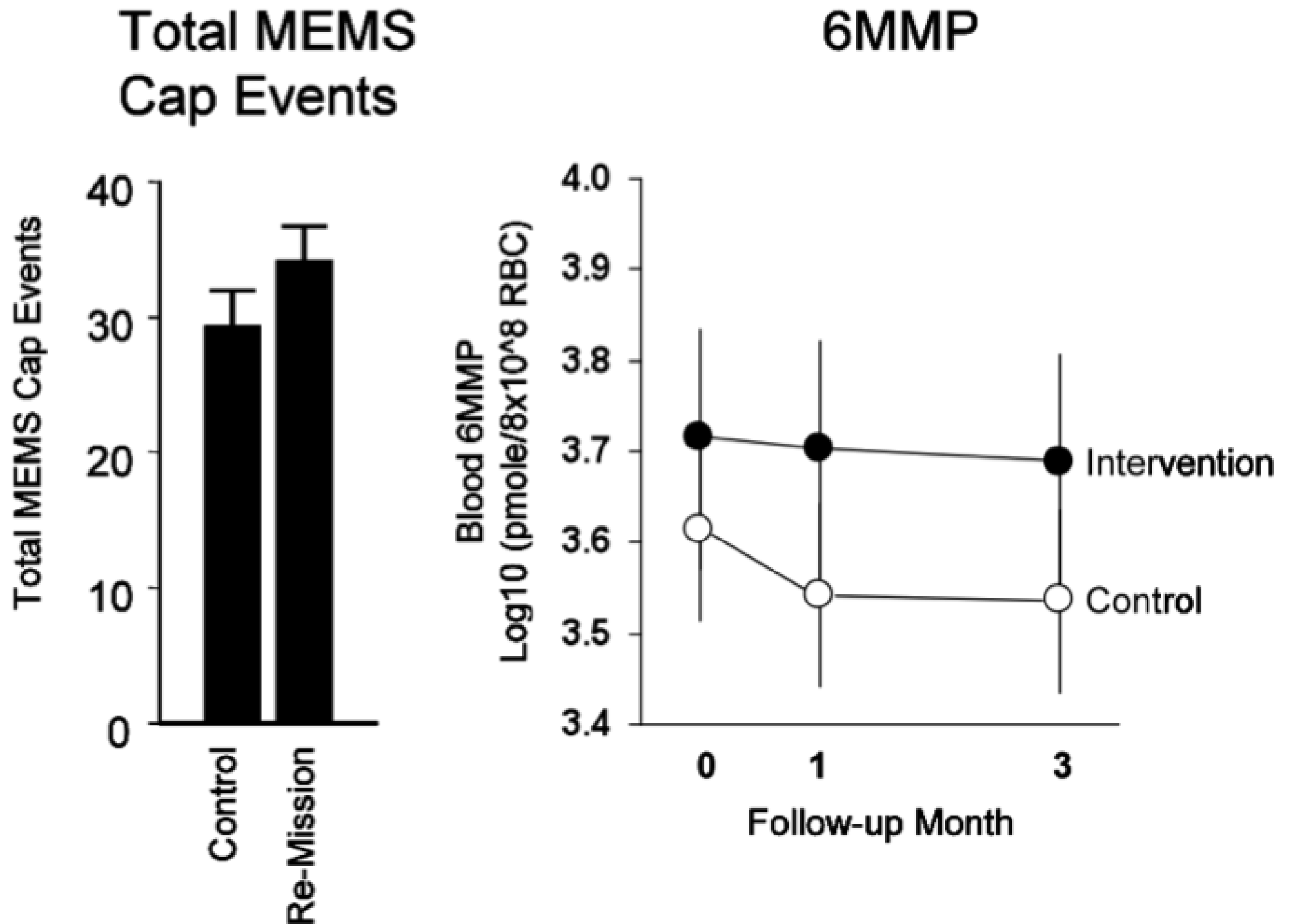
Cancer Knowledge



Self-Efficacy



Adherence



It worked!

PEDIATRICS[®]

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

**A Video Game Improves Behavioral Outcomes in Adolescents and Young Adults
With Cancer: A Randomized Trial**

Pamela M. Kato, Steve W. Cole, Andrew S. Bradlyn and Brad H. Pollock

Pediatrics 2008;122:e305

DOI: 10.1542/peds.2007-3134

Re-Mission Today

- Available at www.re-mission.net
- Follow-up research* showed interactivity improved adherence motivation
- Re-Mission 2, a series of casual games, is out!

*Cole, S.W., Yoo, D.J., Knutson, B. (2012). Interactivity and Reward-Related Neural Activation During a Serious Videogame. PLoS ONE.

AIR Medic Sky 1

Crisis Response Team

Why haven't you heard about this game?

- Lack of appreciation of the importance of research and a business perspective

A Game You Will Hear About

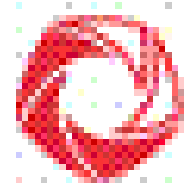


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COMMANDER

Research and Marketing

janssen



Healthy Solutions

INTEGRATED HEALTH CARE

What Does the Future Hold?

- Larger companies will include serious games for health in their businesses (e.g., pharma, medical publishers, medical insurance companies)
- Standards will emerge for creating quality games
- Serious games organizations will live or die based on their ability to *collaborate across disciplines* especially with *research and business experts*

Conclusions

- Research should be planned from the start
 - With a strong theoretical basis and ongoing input from target groups
 - Input from stakeholders is also critical
- Marketing should be planned from the start too
- The future depends on openness and collaboration and YOU!

Thank you!

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