



The Computerworld Honors Program

Honoring those who use Information Technology to benefit society

Final Copy of Case Study

YEAR:
2012

STATUS:
Laureate

Organization name:
MedRespond, LLC

Organization URL:
www.medrespond.com

Project Name:
Effective Brief Intervention Project (EBI)

What social/humanitarian issue was the project designed to address? What specific metrics did you use to measure the project's success?

Substance use disorders are a major concern in the U.S. The CDC reports that alcohol and drug misuse are the third- and ninth-leading actual causes of U.S. deaths, respectively, exceeding deaths caused by infectious agents, motor vehicle crashes, firearms and sexually transmitted diseases combined. A CDC report estimated 2006 societal costs of alcohol use to be \$235 billion, more than \$25 billion of that for medical costs. Routine screening and brief intervention for alcohol use and depression is an evidence-based approach to prevent health and other consequences. The United States Preventive Services Task Force recommends routine screening for alcohol use and depression. The evidence of impact and cost-benefit of alcohol screening is equivalent to colorectal cancer and hypertension screening, and surpasses the benefits of cervical and breast cancer screening, cholesterol screening, screening for depression, obesity screening with one year of intensive diet and exercise counseling, and many other routinely provided and covered clinical services. To promote broad implementation of these protocols, the Joint Commission recently adopted evidence-based substance use screening and intervention performance measure set for hospitals. These include inpatient screening for unhealthy alcohol use and brief interventions for alcohol misuse. Implementation of this recommendation will require a massive training effort to teach healthcare providers the skills necessary to effectively conduct a brief intervention. A key part of this training is skill practice, often done with paid actors or in group settings. That method is costly, time consuming and not practical for every setting. The EBI project was designed to provide the EBI education and skills using innovative artificial intelligence tools and simulated patients. Providers' scores in dozens of EBI exercises and the provider's

report of skills confidence after the program have been used to measure the success of the EBI program.

Please describe the technologies used and how those technologies were deployed in an innovative way. Also, please include any technical or other challenges that were overcome for the successful implementation of the project.

The EBI Program employs Synthetic Interviews, a patented technology developed by researchers at Carnegie Mellon University (CMU). The technology combines artificial intelligence, streaming video and machine learning to simulate a one-on-one conversation. The core of the EBI program content is based upon a curriculum developed by Jan Pringle, Ph.D., of the University of Pittsburgh School of Pharmacy. Jan is a nationally known expert in brief intervention techniques and effective EBI teaching strategies. The first challenge was to transform the traditional PowerPoint presentation into an engaging online experience. MedRespond worked with writers from CMU's Entertainment Technology center to evolve the PPT into an interactive story, a mini-drama between two healthcare professionals who convey the lessons of EBI in their dialog (Appendix 1). The next challenge was to create language models that are used to assess the healthcare provider's attempts at engaging with the patient. EBI customized models were created to support each step of an EBI encounter, such as evaluating open vs. closed probes, detecting accusatory language and assuring the interactions were on topic. The final challenge was to manage the hundreds of videos and other necessary elements to drive the simulation. Each skill practice sets up a scene asking the provider to type in the question they would pose to the patient. Once their response is evaluated, the system must choose which video response should be displayed. If the question posed was accusatory, the video shows the patient getting defensive. If the question was directive, the patient shuts down. All of the videos must be managed and integrated into the system using a content management system designed specifically for EBI implementations, so that when the provider asks our patient "Pat" a question, Pat responds appropriately (Appendix 2).

Please list the specific humanitarian benefits the project has yielded so far.

The EBI program has been completed and tested by the Program and Evaluation Unit (PERU), part of the University of Pittsburgh's School of Pharmacy. It is now being launched in medical residency programs across Pennsylvania, including Einstein Medical Center and UPMC hospital sites. As these medical residents enter their practice, they indicate that the program has helped them feel confident to conduct the brief interventions that are the key to unlocking the benefit of reducing harmful drug and alcohol use.

Please provide the best example of how the project has benefited a specific individual, enterprise or organization. Feel free to include personal quotes from individuals who have directly benefited from the work.

The first group to utilize the program were medical residents from Einstein Medical Center who were about to enter a rotation in the emergency room. The group was asked if the program had helped to prepare them for intervention with patients. The sample of feedback below confirmed the learning impact, in the residents own words: "I feel more comfortable in approaching the topic." "The emphasis on open-ended questions and reflections help to keep the situation from becoming one-sided from the physician perspective." "The modules were repetitive and clearly presented so I feel that I have a well-formed idea of what I would ask my patients and how I can get them to form the ideas for change themselves." "Helped me practice making open-ended questions, as well as affirmative statements." "Helped me to realize parts of my dialogue that could be taken as confrontational." "I think this program taught simple skills that doctors can use

when discussing sensitive topics. I felt that the skills taught here focused on being empathic with the patient, which will allow a more open relationship with the doctor and the patient."