

BuildHealth : Spring 2012 Report

SYNOPSIS

The inaugural BuildHealth event occurred on April 14 - 15th at Bucketworks in Milwaukee, WI. Emphasis was placed on logistics and community connection with a vision for sustaining the event. The primary goal of this BuildHealth was to generate positive dialog among normally disparate skills-sets with the intent of generating creative solutions to pressing problems in health care. Both anecdotal and survey feedback suggest the event was viewed as a success, and that there is a desire to see the BuildHealth concept continue development.

Of 5 initial teams, all 5 came up with a concept and presented it to the judges. Those concepts and their descriptions are included in this report below.

Participation

34 registered attendees

There were 10-15 more individuals who participated either in the launch of the event or the closing presentations.

Sponsors

The BuildHealth organization would like to express great appreciation to sponsors listed here. They made the event possible.

Wisconsin Medical Society
University of Wisconsin Population Health Institute
Wisconsin Hospital Association
Wisconsin Collaborative for Healthcare Quality
Asthmapolis
The Department for Health and Human Services

Core Contributing Personnel

James Carlson – advising, outreach and facilitation
Tina Chang – judge
John Hartman – judge
Sharon Lerman – advising, outreach and facilitation
Chris Meyer – advising
Ken Munson – outreach and presentation
Kendi Parvin – editing
Pete Prodehl – advising and outreach
Mark Ratzburg – concept development, advising, and content
Linda Syth – fundraising, advising and outreach
Tim Syth – producer
Greg Tracy – judge



BUDGET

EXPECTED ATTENDEES	50
TOTAL FUNDS	6,200.00
WMS	3,500.00
UW Population Institute	1,000.00
WHA	1,000.00
WCHQ	500.00
Asthmapolis	200.00
EXPENSES	6,200.00
1st prize	1,500.00
2nd prize	1,000.00
3rd prize	500.00
People's Choice	500.00
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	3,500.00
Design	125.00
SAT Breakfast	450.00
SAT Lunch	450.00
SAT Dinner	450.00
SUN Breakfast	450.00
SUN Lunch	450.00
Tax	0.00
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	2,250.00
Facilities & Production	325.00
VARIANCE	0.00



CONCEPT 1

1st Place and People's Choice Award

Title: Multi Surface UV Room Sanitation Solution

Overview: The goal of this concept was to create a working prototype of a multi-device room sanitation system that would provide ease of use for healthcare facilities by incorporating autonomous capabilities into the system. The team envisioned a system that could easily sanitize a room before a patient enters for care, either for extended stay or operation, and again after the patient leaves. This system is not designed to eliminate current cleaning procedures but instead to supplement and reduce them, and make them much more effective overall.

Synopsis: The prototype created involves three types of devices working simultaneously to sanitize a room: an overhead light, a rotation platform and a self-guided device similar to a Roomba. The overhead light, which could be incorporated into existing light structures, is controlled initially by a user who sets the room into "clean mode" by shutting the door. (This is sensed by a proximity sensor in the door.) The user then puts the room into sanitation mode by turning a dial external to the room. Once the overhead light is activated, it will send a wireless signal to the other devices in the room. One device is a rotational platform that will radiate light to areas where the overhead cannot provide direct light, such as under cabinets. A self-guided device, similar to a Roomba, will cover areas that the other two devices cannot reach such as under beds and counter tops. These three devices will expose direct light to all surface areas of the room.

Current devices on the market rely on extended exposure time to kill pathogens in shadows. This system will cut sanitation times and be more effective by providing direct light to all areas. The system will be affordable to healthcare facilities because they would need only to invest in overhead light arrays for each room as well as a small number of rotational platforms and Roomba devices that could be transferred to each room as necessary.

Challenges: Having only 12 to 13 hours to build hardware was a formidable challenge. Team members brought many tools to the event but needed two hours to get additional supplies at a home improvement store. Creation of the spinning reflector was challenging as well. The team had to improvise by modifying vacuum belts to custom sizes and creating pulleys out of sliding door handles and cardboard. The most challenging part though, was customizing the Roomba. The donated Roomba did not have a battery and the team had never used one before. They hooked up a microcontroller and programmed it to override the Roomba's controls so it could be started without human intervention. The team also had to install controls so the lights would turn on when the system was ready to go. The goal originally was to have a wireless link between the ceiling unit and these devices, but the team ran out of time due to problems with the Roomba circuitry. Instead, the team used switches and microcontrollers that implemented a time delay so they could initiate the systems, leave the room, shut the door, and allow the systems to start up on their own.

Team: Jesse Robinson, Steve North, Alex Lee

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CONCEPT 2

2nd Place

Title: Triage.me

Routing patients to the most appropriate care

Overview: triage.me helps patients determine where they should seek care. Geared towards the underserved and uninsured, triage.me tackles the education, transportation and incentive problems that lead Medicaid and uninsured patients to disproportionately rely on their local emergency departments (ED) for routine care.

Milwaukee County experienced 50,000 ED visits during 2011, 50 percent of which were classified as inappropriate use. Evaluating this statistic reveals a trend consistent with the rest of the country; overuse of the ED comprises a disproportionate number of uninsured and Medicaid patients. The challenge was thus—how can technology help overcome and change the behavior associated with using the ED for routine care.

Triage.me uses highly scalable web and short message service (SMS) technologies to provide a ubiquitous yet personalized solution. It provides real-time decision-making to help patients locate the nearest open free clinic, federally qualified health center, urgent care or ED based on a combination of the patient's insurance status and acuity of their condition. Triage.me relies on personal support and realignment of financial incentives to further encourage patients to seek the advised method of care.

Team: Dan Wilson, Mark Olschesky, Alex Luger, Stuart James, Mark Wolters and Tom Kaczmarek.

Contact: Dan Wilson (Dan@moxehealth.com)



CONCEPT 3

3rd Place

Title: Reality (Check)

Overview: Frequently when a patient is diagnosed with a medical condition, the doctor explains that a medical procedure is required and the patient must decide how to proceed. The objective of Reality (Check) is for patients contemplating a medical procedure to align their expectations with experiences recorded by past patients.

Typically, a patient has limited information about a procedure and the changes they will experience following that procedure. They also may have limited information regarding alternative choices available and potential outcomes if they pursue one of these alternatives. Oftentimes the patient's expectations regarding the impact the procedure will have on his or her life are incorrect.

Reality (Check) is a virtual network where patients who have had a procedure record the expectations they had prior to their procedure, their actual experience and then life after the procedure, including their perspectives and advice they would give now. Newly diagnosed patients would use Reality (Check) as a site for self-education about the realities associated with each of their choices. This experiential education will be written by past patients for prospective patients, providing additional information to facilitate a patient's decision-making.

Challenges: There are some obstacles around populating the database with stories. For example, why should a patient who experienced a procedure, and who may still be in pain and recovering record his or her prior expectations and actual experiences? What timing is relevant? i.e. should the stories recorded be immediately following the procedure and/or several months later and/or several years later?

A potential solution would be to use the StoryCorp.com model where a group with a recording booth comes to a site (city, institution, etc.) and helps the patients record their stories on video, audio, or other media. A caregiver or facilitator could transcribe stories as needed.

Another alternative would be to work with local support groups such as diabetes support or cancer survivor groups, etc. that meet regularly. In this setting, the whole group could suggest what information would be relevant to future patients.

Another challenge is solving the systemic communication issues. Reality (Check) is designed to inform patients, particularly those who perceive benefits from a procedure that are simply not supported by factual evidence and medical data.

How patients develop (learn) incorrect expectations must be examined. They may be the result of communication problems at the patient-doctor level, the patient-institution level, or the patient-community level, etc., and changes to communication policies at the local, regional and/or national level may be needed.

A potential solution is to build a portal into the site to allow medical professionals to weigh in, learn about trends in patient expectations—particularly where the expectations are incorrect—and test methods to correct those incorrect expectations.

Team: Tom Bach, Mark Huber, Heidi Massey, JoAhne Penney, Paul Sanchez, Linda Syth, Kathy Walters, Mike Zielinski

Special thanks goes to Linda Syth and Tim Bartholow, MD, of the Wisconsin Medical Society for their encouragement and supporting data.

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CONCEPT 4

Title: Shared Decision Making: Interactive Patient Education

Overview: One of the challenges health care professionals face is communicating with patients in a way that allows patients to understand their disease or health condition, and the impact their medical/lifestyle choices will have on their care and long-term outcomes. To address this, the team proposed a visual application that uses several graphics modalities, including an avatar to depict how changes in lifestyle, medical choices or treatment options will affect the patient's body.

Objective: The objective of this concept is to improve communication between patients and health care professionals so that patients gain awareness about changes and decisions they can make regarding their health. The goal is to get patients to make lifestyle changes based on the visual images they see and the effect those changes have on their risk for complications. Initially, the focus would be on diabetes. A second area the team would focus on is communication about end-of-life decision making. This module would show the different treatment options that could be used to prolong life and how they impact the quality of life based on the disease process the patient is experiencing.

Challenges: A major challenge will be the integration of data with animation of the Avatar so that graphically depicted responses to data inputs are accurate.

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CONCEPT 5

Title: DEFCON 414

Synopsis: The DEFCON414 team decided to create a system of data entry and management to speed up patient admissions and paper-to-digital data input.

The team immediately realized the importance of implementing data security and entry accuracy features, as well as the need for this tool to work on a multitude of operating systems or "smart" phones, thin clients, and portable devices. The solution was to make this tool flexible, simple to use, accurate, and able to output the data in the format the operator needs. A "web-based" user interface was chosen so it could be used on most devices and PCs with various operating systems, at the same time isolating it from unauthorized interference, minimizing client-based storage, and standardizing the process.

The "first" step of the solution, a web-based user interface, would be adapted to equipment already owned by a provider: a flatbed scanner, a photocopier with e-document conversion, etc. It could also use a webcam/capture device, smart device (iPhone/iPad, etc) . The information captured by these devices could then be displayed or distributed in the provider's desired format(s), i.e. auto-entered into a patient admission form the patient could verify and sign electronically or a printed form when required.

We built the "second" step first: the bulk of data processing around Optical Character Recognition (OCR) using pre-defined "templates" for standard documents and custom or adjustable templates that can be created instantly with a mouse click (or smart device 'tap'). Templates can be created, stored, uploaded, and downloaded on the entry page. The system was quickly set up to recognize electronic images of Wisconsin driver's licenses and state ID cards since they are somewhat standard.

Data could also be sent to a pharmacy, used for patient follow-up visits and billing. Fewer people involved in the data entry process means less cost, less risk to privacy, decreased identity theft, and, thus, lower provider liability. Patients won't need to show up unnecessarily early for appointments to complete paperwork, and healthcare provider employees won't be entering data needlessly at the risk of errors and repetitive stress injuries.

Data could be entered from past patient histories for a better understanding of an individual's health, as well as submission to the CDC or other analysis systems. Our system being modular, the application can be tailored to unlimited potential in data entry for massive cost-saving measures. It eliminates many risks with nonstandard methods and tedious routines currently used in healthcare records and other structured data environments.

Contact: F4R4D4Y ("Faraday"), Defcon Local 414

