The Computerworld Honors Program

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Final Copy of Case Study

YEAR:
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STATUS:
Laureate

Organization name:
Lehigh Valley Health Network

Organization URL:
www.lvhn.org

Project Name:
Digital Pens for Emergency Care at Pocono Raceway

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

This project was designed to solve the problem of Emergency Medical Responders having to organize patient information in stressful, chaotic environments such as a NASCAR raceway event or some other disaster situation. An electronic health record (EHR) would provide clinicians with a mechanism to record diagnoses and a patient plan of care in a computerized format. However, use of an EHR requires the implementation of a network infrastructure, administration of EHR software, laptops and computer workstations. These types of devices, software and accessibility would be cumbersome to organize in a makeshift emergency care area. The solution to this problem was the use of digital pens with customized Emergency Medicine forms that have the capability to sync data to an EHR. Lehigh Valley Health Network (LVHN) is the official medical provider at Pocono Raceway in Long Pond, Pennsylvania. The closest hospital to the raceway is more than 30 miles away. The Sprint Cup Race at Pocono attracts six-figure crowds for the Sunday race and hundreds of thousands of fans over the course of the six-day event. The rapid deployment of the digital pens with templated paper documents allows LVHN to bring the hospital's emergency department to the Pocono Raceway. The metrics that we used to measure success include the data analytics from the June 2011 Pennsylvania 500, Pocono Raceway's annual NASCAR Sprint Cup race. The data was helpful in determining where to position responders, the number of clinicians to have on site and the types of ailments that may have to be treated at future NASCAR races.

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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.

LVHN implemented TSystem Clinical Information System in the Emergency Department several years ago. We extended the TSystem functionality to be used at the Pocono Raceway. The technology deployed includes TSystem's DigitalShare documentation system with digital pen technology. This capability allows LVHN physicians, nurses, emergency medical technicians and paramedics to document patient encounters on familiar emergency care paper templates while capturing this discrete data electronically with a digital pen featuring Anoto functionality. The paper templates mostly have yes/no questions and answers that are marked by a "0" or "/" to accelerate data entry and ensure accuracy. The captured discrete patient data is used to support clinical documentation, data quality reporting and regulatory requirements. The pen's built-in infrared camera records data documented on digitized paper templates. The pen is then "docked" on a base that is connected to a computer, sending the data through a secure web network, making it immediately available for viewing and editing by other emergency responders needing access to the record. The data becomes part of LVHN's emergency medicine EHR.

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

Three emergency care facilities are activated during the Pocono Raceway 500. These facilities include an infield care center, which serves as the primary trauma care site for NASCAR drivers, crew members and spectators. The other two areas are an infield first-aid center for non-urgent care and the LVHN mobile field hospital at the grandstand. The Emergency Response team documents patient information at these three centers with DigitalShare technology. The information is then uploaded to a central data repository. The clinicians will proactively monitor this information and will quickly pinpoint gaps where additional medical staff or emergency personnel are needed and the appropriate resources are immediately deployed. Since all of this data is captured electronically, emergency personnel can access this information to plan for patient care needs for future races and other events. This proactive planning and organization improves the safety and delivery of health care to raceway participants and fans.

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.

"For a race event, because it's planned, I like to term it as 'controlled disaster,' because potentially it's a mass-casualty scenario -- it's controlled chaos," said Mike Wargo, Emergency Operations Administrator at LVHN. Wargo also said that the data gathered and analyzed over several race weeks has been helpful in determining where to position responders and how many people and what kinds of ailments to treat. "Quite a few physicians, as well as myself and others on the leadership team, we don't have impeccable handwriting. We're pretty sloppy, our minds are thinking faster than our hands can write -- that's typically why we have scribble-writing," Wargo said. "The system has done a pretty impeccable job interpreting our handwriting... I think that the technology is being used and acknowledged a lot more. Handwriting recognition and speech recognition -- that's the wave of the future. The combination of digital pen technology, paper forms and EHR software translates the data into useful information for us, after and even during an event."