

Intelligent Health Association (IHA) Awards: 2016 UPDATE: Secrets to Submitting a Winning Nomination

Systemic problems in our complex healthcare system are mirrored within each healthcare facility, regardless of its size or location. Using wireless technologies to extend the healthcare continuum to improve patient care throughout the continuum of treatment, e.g., hospital, outpatient, at home, faces many direct and indirect challenges. No one is unique in the difficulties of isolating problems that can be addressed by using technology and modifying habits (e.g., 100% compliance in hand-washing). Once a solution is agreed on, providers are further challenged in establishing cross-discipline collaboration to implement the solution. Further, with a unique blend of teamwork, providers, vendors, patients, facility boards, advisory councils, advocacy groups, even unions, can influence implementation.

Recognizing the pioneering efforts of providing technologically based solutions for healthcare delivery, the Intelligent Health Association originated the Intelligent Health Awards in 2012. IHA salutes the healthcare pioneers who use wireless technologies to improve healthcare delivery.

Nominating an individual, a team or an organization for an Intelligent Health Award is not complicated. But the process does require dedication, clarity, and focus.

IHA Award Nomination Tutorial

To help you in preparing your nomination, we assembled this tutorial with the permission of the **2014 Grand Award** recipient -- **Children's Hospitals and Clinics of Minnesota (Children's Minnesota)**. The example comes directly from the nominating application.



Receiving the 2014 IHA Grand Award are Bobbie Carroll, senior director of patient safety and clinical informatics, and Sarah Giga, MS, manager, clinical systems integration, both from Children's Minnesota.

The 2015 nomination form can be found at <http://ihassociation.org/awards/>.

Key Questions

Questions 1 and 4 through 8 are scrutinized. Your responses should provide the bulk of the information that the judges will deliberate. Number 9, Supporting Media, is not required, but has in the past helped a nomination edge out another.

1. **Award Category.** Choosing the most appropriate category for your nomination is critical. The most popular category in 2014 was Improving the Patient Experience: Care and Safety. If there are insufficient nominations in a category (at least 3 are required), no award is given.

From the Children's Minnesota application:

1. AWARD CATEGORY (please select one of the following. One category per entry:

Improving the Patient Experience: Care and Safety

2. Specific Accomplishments. In these five questions, the judges prefer succinct, yet complete responses. Forget providing long, jargony, marketing-eze answers that do not address the question. Imparting your story with facts and analysis of results is preferable. Being able to explain the problem, how it was addressed, and by whom brings the judges together and helps them understand the difficulties encountered by the facility. In the evaluation process, the following criteria of the solution presented are considered:

- 1) Impact on healthcare
- 2) Improvement in the patient experience
- 3) Industry challenges are addressed
- 4) Results are documented
- 5) Nominee has a succession of significant technical or other contributions
- 6) Leadership in accomplishing worthwhile goal(s) such as an organization's performance
- 7) Previous honors and other achievements as evidenced by publications (including a video or website link), patents or other evidence

The 2014 judges specifically asked for quantification of results (before/after metrics), the scope of the implementation, and the magnitude of the implementation (size).

The Children's Minnesota nomination is a compelling story. Reducing medication errors, often life-threatening, is unfortunately a goal many facilities face. The nominee chose the target process that would have the most impact, and then how they tackled implementing the solution. Note especially the metrics presented in the Children's Minnesota application. In a data-driven industry, including quantitative results is essential to a good nomination.

What was the problem(s) the technology (ies) used help to resolve? (≤ 250 words)

Children's Hospitals and Clinics of Minnesota (Children's Minnesota), a 381-bed, tertiary-care, pediatric health system, has been selected as a Top Children's Hospital and one of US News and World Report Best Children's Hospitals. Most beds are devoted to critical care, and intravenous (IV) infusions deliver approximately 60% of medications administered at Children's Minnesota. Safeguarding infusions is essential. IV infusions have been associated with 56% of medication errors, 1 and 61% of the most serious and life-threatening potential adverse drug events are IV-related. 2 Compared to other routes, IV medication errors are twice as likely to cause patient harm. 3 The ECRI Institute found that smart pump-EMR integration, which makes it possible to automatically pre-program the pump, could prevent 75% of pump-related medication safety issues. 4 Smart pumps with dose error reduction systems (DERS) need to be fully integrated with electronic medical record (EMR), computerized prescriber order entry (CPOE), bar coded medication administration (BCMA), and the pharmacy information system (PIS) to generate meaningful improvements. 5 In 2011 Children's Minnesota had CPOE, smart pumps, EMR and pervasive, reliable, wireless connectivity, and wanted to implement BCMA—but no vendor offered BCMA that integrated with both large-volume and syringe infusion pumps. Infusion safety technology is needed for all IV infusions to help avert potentially life-threatening errors. Syringe pumps are important because these are used to deliver the very small dosages for neonatal and pediatric intensive care, where patients are especially vulnerable because of their bodies' limited ability to compensate for any medication errors.

This is a tightly packed response. Information provided includes:

- **Succinct description of the facility:** 381-bed, tertiary-care, pediatric health system
- **Evidence of previous honors received:** selected as a Top Children’s Hospital and one of US News and World Report Best Children’s Hospitals.
- **Problem identified with quantification:** IV infusions have been associated with 56% of medication errors, and 61% of the most serious and life-threatening potential adverse drug events are IV-related.
- **Industry-standard provided basis for the nominee’s solution:** “...smart pump-EMR integration, which makes it possible to automatically pre-program the pump, could prevent 75% of pump-related medication safety issues. Smart pumps with dose error reduction systems (DERS) need to be fully integrated with electronic medical record (EMR), computerized prescriber order entry (CPOE), bar coded medication administration (BCMA), and the pharmacy information system (PIS) to generate meaningful improvements.

∞ **How was the solution(s) determined? (≤ 250 words)**

Given the advantages of integration and the limitations of the available BCMA, Children’s Minnesota decided to become the first pediatric hospital system in the US to achieve BCMA-IV infusion pump EMR interoperability, and the first hospital of any kind to help protect both large-volume and syringe IV infusions, enterprise-wide.⁶ To do this, they would do partner with their existing EMR and smart pump vendors in a “triad” of expertise that would be critical to success. The closed-loop medication-administration system would use the wireless connectivity architecture to create two-way communication between the smart pumps and the EMR. A barcode scanning system would be used to trigger automatic pump pre-programming (APP) directly from the order in the EMR, instead of by error-prone manual key presses. During infusion, information from the pump would automatically be sent back to the EMR, including any subsequent changes such as titrating the dose to achieve a desired patient response. APP would automatically add another layer of safety by putting the infusion into DERS, so that 100% of pre-programmed infusions, including multi-ingredient infusions such as chemotherapy and total parenteral nutrition, would also be protected by the pumps’ safety software. Automatic documentation of each step when the nurse signs the data would ensure not only the traditional “five rights” of right patient, drug, dose, route and time, but also the “sixth right”—right documentation. Clinicians would then have accurate and timely infusion data to correlate with patient response when considering next steps in treatment.

This response reveals both the goal and the multi-part strategy that the institution devised to address the issue at hand, decreasing the IV-related medication error rate.

- **Goal:** Become the first:
 - a. Pediatric hospital system in the US to achieve BCMA-IV infusion pump EMR interoperability
 - b. Hospital of any kind to help protect both large-volume and syringe IV infusions, enterprise-wide
- **Strategy:**
 - a. Partner with the existing EMR and smart pump vendors in a “triad” of expertise
 - b. Use closed-loop medication-administration system
 - c. Use the wireless connectivity architecture to create two-way communication between the smart pumps and the EMR
 - d. Avoid manual entry: Use a barcode scanning system to trigger automatic pump pre-programming (APP) directly from the order in the EMR;
 - e. Communicate continuously during infusion: information from the pump to be automatically sent back to the EMR
 - f. Put the infusion into DERS automatically
 - g. Ensure the “five rights” of right patient, drug, dose, route and time, and also the “sixth right”—right documentation with automatic documentation of each step.
 - h. Use accurate and timely infusion data ... when considering next steps in treatment.

∞ **Who implemented it? e.g., existing team(s); new team created; ad hoc team, etc.? inhouse, vendor, mixed? (≤ 250 words)**

The development of real-time, mission-critical functions for BCMA-smart pump-EMR integration goes beyond what BCMA, smart pump or EMR vendors or hospital IT can accomplish alone.⁷ Children’s Minnesota created multidisciplinary teams that included clinical education specialists, pharmacists, information technology/clinical applications analysts, and bio-medical staff. The teams worked with the vendors to develop a detailed plan and manage every step of pilot and house-wide implementations of the integrated system. Pharmacists worked extensively with physicians to align the BCMA, smart pump and EMR datasets. Clinical informaticists “translated” clinical workflows and practices for the clinical applications team to help them gain in-depth understanding of clinicians’ needs. This resulted in significant cultural change, improved working relationships and greater trust as other disciplines came to understand the demands of nursing practice. Just as important, clinicians know they still need to apply their critical thinking as the ultimate safety check. Following a successful six-week pilot test in the pediatric intensive care unit (PICU), BCMA-smart pump-EMR integration was implemented throughout Children’s Minnesota hospitals. The successful implementation improved medication safety and demonstrated to the healthcare community that interoperability was ready for reliable, enterprise-wide clinical use.

This response underscores that the complexity of the implementation requires a complex, if not novel, mixing of facility cultures.

What worked? What didn't? (≤ 250 words)

Interoperability provides actionable data with tangible proof of medication-safety and practice improvements. Compliance with DERS usage increased on average 57%, and improvements are being sustained. High-risk overrides of DERS alerts decreased 87%, and instances of severe harm averted almost doubled. Challenges included the extensive work required to align the CPOE and smart-pump drug-library datasets. "Mapping files" send a multi-ingredient IV order to a specific line-item in the drug library. A "wild card" entry logs any combination of ingredients not already in the mapping file. These logs are reviewed and new items added to the mapping file to continuously improve order/APP management. Nurses are now more satisfied, knowing that they can confidently manage IV infusions with greater safety. Clinicians can review data in the EMR and correlate medication dosing to the patient's vital signs, knowing the documentation is timely and accurate. In critical-care units, highly visible large-screen computer monitors provide clinicians with an immediate snapshot of the patient's condition as soon as they walk into the room. Seeing the screen also gives families a sense of calm, knowing that vigilance for their child is of utmost importance to the clinicians. Children's Minnesota's successful implementation has received the "Process/System Innovation Award" from the Minnesota Alliance for Patient Safety and the Way Paver Award for Institutional Achievement from the TerraPharma Project, a patient safety advocacy organization. Reports on the Children's Minnesota achievement have appeared in Patient Safety and Quality Healthcare,⁶ Biomedical Instrumentation & Technology,⁷ and Healthcare Informatics.⁹

This response documents positive results but also recognizes there are ongoing challenges. It is clear that this is an ongoing program and not a one-off project.

What next? (≤ 250 words)

Children's Minnesota's achievement is unique in going beyond barcoding scanning of shots, drops and pills to use interoperability to exchange large-volume and syringe pump-EMR information for pediatric-hospital care. The hospital's smart pump vendor is currently developing BCMA-smart pump-EMR interoperability for patient-controlled analgesia (PCA). When available, Children's MN plans to include this as another vital component of its integrated medication safety system. In the years ahead, the interoperability of smart medical devices and IT systems will undoubtedly become even more important, as the ability to automatically capture and manage patient data play an increasing role in improving patient safety, clinical outcomes, staff productivity, and financial performance.⁸ Most importantly, the added safety and efficiency of the new systems at Children's Minnesota allows nurses to focus more attention on what is most important for everyone—caring for the patient.

This response demonstrates new relationships were established that continue.

3. Supporting Media. Submitting a YouTube or a slide presentation link can add tremendous value to your nomination application – should you do it well. Anything over 2 minutes will be ignored by the judges.

A YouTube link to a video (up to 2 minutes) and /or a link to a website may also be included, but not required. Alternatively, you may supply a link to a slide presentation (this will not be posted publicly unless explicit permission is provided.)

YouTube/website link: <http://www.youtube.com/watch?v=6dM6-qk2hoY>

Watch the video to glean further insight into the program.