Organization: Johns Hopkins Hospital, Adult Emergency Department
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Solution Title: Development of an Innovative Evidenced Based Practice Project: Building a Difficult Access Team in an Emergency Department

Focus Area: (please check all that apply)
- ✔ Communication
- ✔ Competency Assessment
- ✔ Core Measure
- ✔ Crisis Prevention
- ✔ Culture
- ✔ Diversity
- ✔ Education
- ✔ Emergency Department
- ✔ Environment
- ✔ Event Reporting
- ☒ Falls
- ✔ Hand Hygiene
- ✔ Infection Prevention
- ✔ Information Technology
- ✔ ICU
- ✔ Laboratory
- ✔ Labor & Delivery
- ✔ Lean Operations
- ✔ Medical Equipment
- ✔ Medication Safety
- ✔ Patient Assessment
- ✔ Patient Involvement
- ✔ Pediatrics
- ✔ Pressure Ulcer
- ✔ Process Redesign
- ✔ Surgical Services
- ✔ Teamwork
- ✔ Workforce
- ✔ Other (please specify)

Please indicate your interest in the following:
- ✔ Yes, the Maryland Patient Safety Center has permission to publish this Solution and place it on its public website.
- ✔ We are interested in displaying a storyboard and participating in lunchtime presentations.
  (storyboards will be displayed on easels, and cannot be larger than 3 ft wide x 4 ft tall.)

Please complete the Submission and Application Form, including related tools and resources as attachments, and send to:
lcatsos@marylandpatientsafety.org by November 9, 2015.

If you are unable to insert information, have any questions, or need further information, please contact: lcatsos@marylandpatientsafety.org
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**Program/Project Description, including Goals:** What was the problem to be solved? How was it identified? What baseline data existed? What were the goals—how would you know if you were successful?

The problem: Emergency Departments (EDs) across the nation are facing the challenges of longer lengths of stay due to increased volumes and patient acuities. In a Level One Urban Academic Medical Center that sees 70,000 patients annually, failure to obtain timely diagnostics threatens the provision of safe and quality care. Intravenous (IV) access is critical, yet a large proportion of patients seen in the ED have difficult IV access. Preliminary data suggests these patients take on average three times longer to obtain IV access; several case observations have demonstrated up to a seven hour delay for placement of definitive IV access.

How was it identified: The problem of difficult IV access and its impact on patient safety was a staff identified project. An experienced clinical technician had a patient encounter in which a patient sat for many hours in the waiting room without the completion of laboratory tests because of the inability for the triage technicians to obtain IV access. The patient was later found to have a life-threatening elevation in her electrolyte levels. This delay in care prompted the technician to initiate an interdisciplinary quality improvement project to formulate a solution.

What baseline data existed: Baseline data was collected by ED volunteers to track lab order to blood draw times, as well as blood draw and IV placement procedure start and completion time. In addition, ED nurses and technicians were asked to record the medical record numbers of patients with difficult IV access for later chart biopsies. To date, volunteers have observed 156 procedures, and the quality improvement team has extracted data from 52 difficult access patient charts.

**Process:** What methodology or process was used to develop the Solution?

The Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Model was used to develop the solution. This includes use of the Question Development Tool, a Literature Review, Research Appraisal, and evidence synthesis to guide project development. Additionally, the team utilized the Johns Hopkins Comprehensive Unit-based Safety Program (CUSP) tool. A modified version of the CUSP pre-mortem tool was used to assess and address potential barriers to successful project implementation.

**Solution:** What Solution was developed? How was it implemented?

The interdisciplinary team collaborated to develop an innovative solution to the problem of difficult access patients in the ED by creating Access in Minutes (AIM) Team. This team consists of venous access subject matters who can be called when traditional approaches have failed. These technicians are considered experts in the field by both their peers and themselves.
The solution was implemented using the JHNEBP Model and after conducting a literature review, data collection, and on-going interdisciplinary meetings. The members of the AIM team were selected through self-nomination. According to our investigation, one of the most effective ways in establishing expertise is through self-identification. Additionally, those on the team must show strong leadership, effective communication and motivation, in order to serve as an advocate for the difficult access patients. After identifying two AIM members, the AIM technicians conducted two pilot shifts in order to create an optimal work flow within the current system. We are continuing to pilot the project and expect to have the AIM technician in effect during our peak times of 11:00 AM to 3:00 AM 7 days a week.

**Measurable Outcomes:** What are the results of implementing the Solution? Provide qualitative and/or quantitative results to data. (Please include graphs, charts, or tools).

Quantitative Measures:
Order to procedure start
Procedure start to procedure complete
Order to procedure complete

In order to obtain baseline data, the team employed two strategies. The first included a convenience sample of (N=156) patients seen the Adult ED in an urban academic hospital. Data collection took place in the triage phlebotomy area tracking the time from procedure start to procedure complete to obtain IV access. The second data collection included a chart biopsy of (N=52) patients requiring two or more attempts to obtain definitive IV access. The expected outcomes of this EBP project are to reduce order to access time, reduce the number attempts to obtain IV access, and reduce the time to obtain lab specimens.

Results of the triage phlebotomy data collection (N=156) showed the average time to obtain IV access on a standard patient was 5 minutes from procedure start to procedure finish, while a patient with difficult IV access required an average of 15 minutes from procedure start to procedure finish. The results of the second data point collection (N=52) showed 12 % of patients waited greater than 8 hours for definitive IV access. 88.5% of the sample of patients required more than two attempts to obtain definitive IV access.

These results represent a significant number of patients with difficult IV access and represent a threat to patient safety. Developing and implementing the difficult access team will create measurable change in the outcomes outlined above.
Sustainability: What measures are being taken to ensure that results can be sustained and spread?

The ED will be staffing the AIM technician as an additional clinical technician from 11:00 AM to 3:00 AM and is covered by the current approved departmental budget. As the role becomes more established, data will be collected on the above measures, as well as characteristics of the difficult access patients. This will be used to create an innovative predictive scale for establishing difficult IV access. The goals and successes as a best practice are being disseminated throughout the department, as well as at the Johns Hopkins Patient Safety Summit and Maryland Nurses Association Convention. The team is awaiting approval for other
conference submissions and is actively seeking the opportunity to share the results of this EBP project.

**Role of Collaboration and Leadership:** What role did teamwork and collaboration play in the Solution? What partners and participants were involved? Was the organization’s leadership engaged and did they share the vision for success? How was leadership support demonstrated?

Interdisciplinary collaboration has been integral to the development of the AIM program. The interdisciplinary team consists of nursing leadership, bedside nursing, experienced clinical technicians, medical residents, a physician’s assistant, as well as an attending. In addition to the project team, the role has been presented to, and approved by, the Patient and Family Advisory Council and the Clinical Operations Committee (COC). COC is comprised of nursing as well as departmental leadership and has given enthusiastic support for the AIM project. More specifically, one of the nursing leaders has played a key role in organizing the initiative and serving as the project lead. Medical and nursing leadership has demonstrated support by granting the team time to present at the Johns Hopkins Emergency Medicine Fall Research Day which has previously had minimal nursing representation. Additionally, nursing leadership, including the Director of Nursing and Assistant Director of Nursing, have attended a Patient Safety presentation by the AIM team.

**Innovation:** What makes this Solution innovative? What are its unique attributes?

This solution is innovative in that it addresses a staff identified patient safety concern and harnesses existing resources and the benefits of interdisciplinary collaboration. Furthermore, not only does it address a patient safety concern, but it also creates a career ladder within the clinical technician position and solidifies an informal leadership process already in place. According to our investigation, this will be the first ED-based difficult access technician team (subject matter experts) to supplement existing IV access resources. Additionally, our team has the unique opportunity to build on the strengths of previous successful clinical technician project in the department which has sustained nationally recognized results.

**Related Tools and Resources:**

Johns Hopkins CUSP Pre-Mortem Tool  
Johns Hopkins CUSP Learning from Defects Tool

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The Solutions selected to receive the Minogue Award for Patient Safety Innovation will reflect the following Award criteria:

- Be innovative
- Demonstrate measurable change
- Exhibit strong collaboration
• Exhibit strong leadership
• Advance the culture of patient safety
• Constitute a best practice with the ability to spread

SUBMISSION AND APPLICATION FORMS ARE DUE BY FRIDAY, NOVEMBER 9, 2015. Faxed or Mailed Solutions will not be considered. All Solutions must be received electronically.