

Checklists improve success rates for high-risk, low-frequency procedures in the emergency department

BOSTON CHILDREN'S HOSPITAL

Boston Children's Hospital (BCH) is a freestanding, quaternary-care children's hospital with approximately 400 inpatient beds and 60,000 annual emergency department (ED) visits. The ED treats patients who walk in or are brought by ambulance from the surrounding communities, as well as patients referred in from other hospitals in Massachusetts, New England and farther locales.

Challenge

Emergency department teams must be prepared for anything, but procedures that are performed rarely can be challenging to execute properly without practice. Checklists and simulation for high-risk, low-frequency procedures can help improve success rates and avoid errors.

Action

The ED at Boston Children's Hospital, one of the top pediatric care centers in the nation, has implemented a series of checklists to guide clinicians through procedures that may need to be done in the ED. Checklists can help physicians walk through the most important steps of a procedure. Recognizing that critical care procedures are frequently performed in a pressurized situation, the BCH checklists are designed to make staff think about equipment, personnel and patient factors that could make a procedure more difficult.

BCH physicians have been using a checklist for intubations routinely for about five years. The laminated checklist has brightly colored illustrations and is available with intubation equipment in each resuscitation room. Before the procedure begins, an ED staff member reads the checklist out loud to the care team to ensure all bases are covered. After the procedure, provider completes a brief data form about the intubation, if they used the checklist,

and if it was helpful or caught something they might have missed. This has allowed the ED to make improvements to the checklist and review with staff. For faculty and fellows, simulations on airway include the checklist so that its use becomes routine.

In 2014, in response to complications from placement, the ED team developed a chest tube checklist in simulation, which was then introduced into the clinical setting. The checklist accompanies the chest tube kits in the ED, so it is readily available for use. The checklist is double-sided with bullet points on the front and detailed instructions for teaching purposes on the back. Training in simulation with the checklist, including faculty, has led to a 50 percent reduction in complications.

In addition to the intubation and chest tube checklists, ED staff are trained in simulation with checklists for ultrasound-guided femoral central lines and intraosseous needle placement ("IO"). After simulation with the IO checklist, first pass success with IO placement has improved to over 80 percent. Each checklist is available in a departmental online library with videos and teaching references. BCH tracks critical care procedure complications as a quality indicator.

Outcomes

- The chest tube checklist, combined with training in simulation with the checklist, has led to a 50 percent reduction in complications.
- With training and a checklist, successful first-pass placement of ultrasound-guided femoral central lines and intraosseous needles increased to over 80 percent.