

Enroute to an Error-Free Emergency Department

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Opinion

A 20-year-old man shows up for the third of eight chemotherapy sessions for acute lymphoblastic leukemia. The first two sessions went well and his anxiety about handling the medicines has largely dissipated. Today he will receive four medications, all intrathecally delivered, save one. The oncology fellow greets the patient and begins to administer the medications after performing a lumbar puncture on the first attempt. On a tray set-up on a Mayo cart are four syringes with the different medications. The nurse hands the syringes to the fellow one at a time. The fourth syringe is connected to the intrathecal line and the patient immediately becomes diaphoretic. His heart rate rapidly increases, and he begins to seize. The fellow frenetically yells for help and nurses and doctors in the clinic pour into the room. A crash cart is opened. The patient is given Ativan without relief. He deteriorates into ventricular fibrillation and stops breathing. CPR is performed until the paramedics arrive. He is resuscitated in the emergency department for over an hour. In the ICU the patient remains intubated and demonstrates no cortical or brainstem activity. Back in the clinic, a syringe labeled "Vincristine: Not for Intrathecal Use" is found on the floor. A nurse recalls seeing the word "intrathecal" on the syringe. The fellow admits they were distracted by the procedure. The pharmacist maintains the label was clearly placed. The patient's family plans for the worse with little solace after being informed of a "systems failure". This scenario and others similar this happen often enough with varying consequences to be of concern to our community: the wrong drug, the wrong dose, the wrong route, the wrong order, the wrong outcome. Medicine errors are largely human errors. As long as we remain human, we will continue to make mistakes, even experts. As a matter of fact, the way to tell an expert from someone who looks and acts like experts is to ask the expert about their last mistake. An expert is still stewing about the mistake and asking, "What could I have done differently?" A nonexpert will deny the mistake or blame luck or circumstances. No one wants to make mistakes yet there can be great value in them. Research on how people make decisions under extreme pressure notes that people are hardwired to make critical decisions based on experience. Moreover, people become open to formulating better mental models of a situation after having made a critical mistake. Thus, mistakes make us wiser and better experts but only if we reflect on the mistake to learn. The potential for making avoidable mistakes looms everywhere, especially in the Emergency Department (ED) and during our busiest and most stressful times. Consider for example the seemingly innocuous process of giving a verbal order, which is ubiquitous in the ED. We give verbal orders in our attending-resident discussions, during emergent medical resuscitations and procedures and even when simply walking into or away from a patient room, often prior to entering the order electronically. Verbal orders are given attending to resident, PA to nurse, resident to nurse, nurse to transport tech, and the permutations are numerous. But within the link of identifying a need or problem, to giving a verbal order, and to executing the order exist numerous pitfalls and traps for error. Errors in communication and misinterpretation or clarification can occur. Still, verbal orders are an important mechanism of communication especially as a patient's condition changes or declines. What is the solution then to limiting the bruises of verbal order?

A few simple steps have been shown to be effective. First, the prescriber states the order, and the receiver restates it back for clarification. The prescriber then confirms the order. This three-step intervention has been shown to decrease verbal order errors [1]. For example, an ostensibly straightforward scenario can be envisioned: a physician reviews recent lab results and then asks the nurse to "give 40 of K". KCl or vitamin K? What units? By what route and over what period of time? A clearer order would be "40 meq of KCl IV over 2 hours." Clear, focused, and specific communication goes a long way to preventing medical mishaps. The problem of addressing medical errors is nothing new. In 1999, the Institute of Medicine published their opus "To Err is Human" that detailed the sources and costs of hospital errors in the US [2]. The report noted that up to 98,000 people were dying annually due to avoidable hospital errors at a cost of ca. \$29 billion per year. Amongst the most common errors are adverse drug reactions, wrong surgical sites, falls, pressure ulcers and mistaken patient identity. The worst and most serious errors occur in intensive care units, operating rooms and emergency departments. Note surprisingly, these units see the greatest numbers of high acuity patients. Most medical errors are not the result of individual malpractice but by faulty systems and limited mechanisms to prevent mistakes. In the years since the Institute of Medicine's (IOM) publication, hospitals are certainly safer due in part to several key initiatives. Self reporting of errors is now the norm, and this type of introspection is a healthy way for institutions to look within and reevaluate failed procedures and processes. However, no legal mechanisms or protections exist to deter retribution or punishment regarding self-reporting of errors [3].

Another key initiative to reduce mistakes and adverse outcomes is the advent of the checklist [4]. The central-line checklist, for example, can be tedious but it is indeed a valid tool. Its purpose is to reduce line infections, which are associated with high morbidity and mortality and high costs. Steps in the checklist require basically hand soap, an antiseptic solution and sterile drapes, gowns, and gloves. Consider that you would not likely plan a long journey without a list or a plan. We even go to the grocery store with a list. So why not utilize a list that underscores the key steps of a procedure that can be fraught with complications, some minor, some large. Fundamentally, Emergency Medicine continues to be proactive about addressing medical errors. As a profession, we strive to become more practical in identifying the potential origins of medical errors, improve sign-outs, decrease drug dose errors, and provide clearer discharge instructions. The ED should be at the forefront of the movement to minimize medical errors. We see the highest acuity of undifferentiated and we continually work, and rework patient management plans and we are plagued with distractions. It is not uncommon to be with a patient and then drop everything to run to a medical resuscitation. Conversations regarding medical errors in the ED should include the inherent pressures of such a high stakes environment. There is no clear universal solution to reducing medical errors and thus improve patient safety. A partial solution may lie in more checklists -- protocol driven and follow the standard of care for specific chief complaints. A chest pain protocol, an asthma protocol, a headache algorithm can provide a basic framework from which to begin. Computer-based order entry systems are readily adapted to aid in this process via order sets and best practice alerts. Yet, clinical gestalt is still an important factor and as noted above, experts rely on experience to make decisions. Other solutions are more obvious but more difficult to achieve such as increasing nursing staff,



enacting procedures for self-review and self-reporting that are safe and confidential, and obtaining a complete commitment from all stakeholders in emergency-medical care including physicians, nurses, consult services and hospital administration. Yet we have seen the strain of the current pandemic on staffing and decreased nursing; we will only in time be able to assess the long-term effects of Covid on patient care. While there is no magic bullet, we continue to review our mistakes and like experts ask, "What should we do differently?" Only then can we work toward error free emergency medicine care.

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