

## Learning From Others: A Case Report from the Anesthesia Incident Reporting System

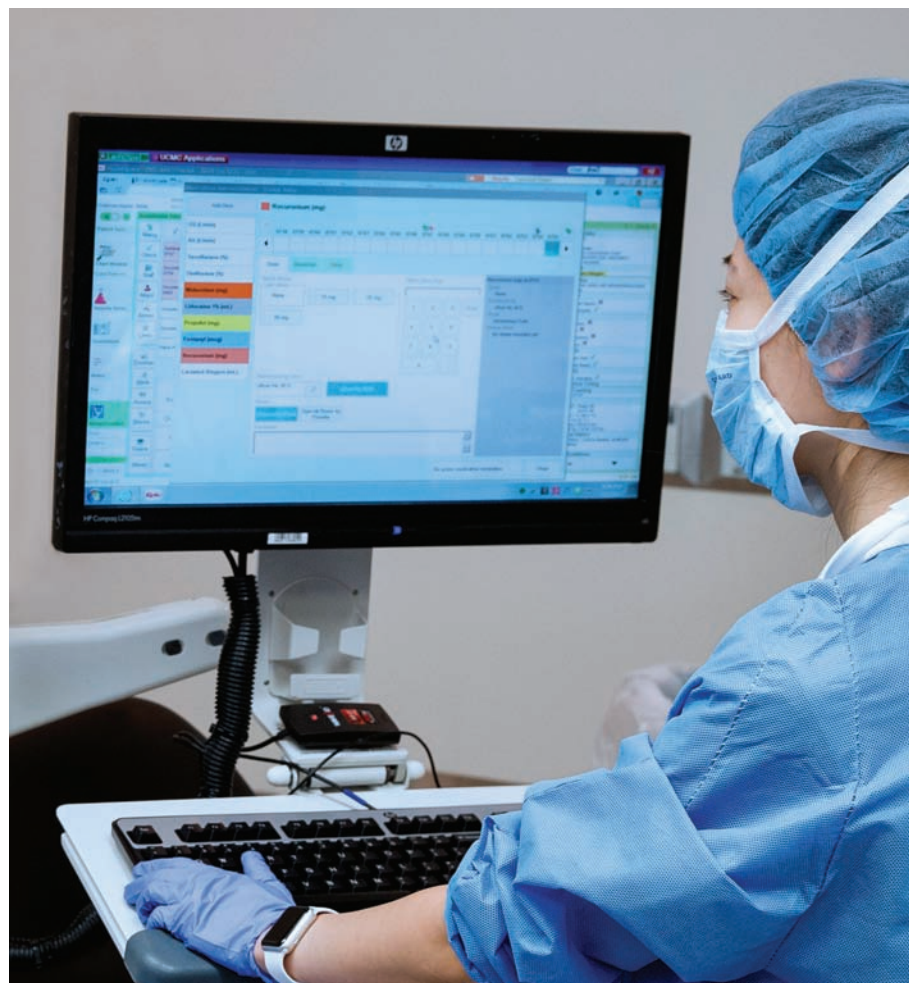
### Case 2020-10: Operating in a digital vacuum

An active 4-year-old girl underwent anesthesia for routine MRI evaluation of medulloblastoma at a freestanding health care facility. Multiple previous anesthetics for the same investigation were noted to be uneventful. The parental MRI screening questionnaire noted a potential past reaction to contrast in another medical facility, which the mother reported as “some hypotension related to anesthesia.” It was reported to the mother there were no special drugs given to treat the hypotensive episode.

Since there was no documentation of any visits to an outside facility, there was an assumption this hypotensive occurrence happened far in the past. The current anesthesia for an MRI was induced uneventfully and the appropriate dose of gadobenate dimeglumine (MultiHance®) was given. Within minutes, the patient developed rapid-onset severe hypotension and was given epinephrine. Unfortunately, the child deteriorated quickly to a state of pulseless electrical activity. A presumed anaphylaxis event occurred, thus the Pediatric Advanced Life Support guidelines were implemented. Stabilization attempts were made prior to emergent transfer to a hospital. Quickly, the patient developed signs of overwhelming metabolic acidosis, disseminated intravascular coagulation, and spontaneous circulation could not be maintained despite high-dose epinephrine infusion (1mg/kg/min). Due to these factors, the parents elected to remove life support for their child.

**“All but the newest practitioners will know the difficulty of navigating reams of paper-based notes, and it is certainly impractical to expect the family of a child with a complex background to carry several hundred printed sheets to every episode of care.”**

Through a later investigation, case notes were obtained from another facility that documented a severe hypotensive episode requiring epinephrine bolus and overnight PICU monitoring following an attempted



ASA is interested in collecting vaping-specific data to formulate recommendations for anesthesiologists taking care of these types of patients. The AIRS database is now capable of receiving data for this purpose. Please enter any available information at [www.aqiairs.org](http://www.aqiairs.org).

MRI scan with the same contrast dye. This information had not been available in the medical record on the day of the child's death.

This tragic case highlights the challenges of communication to maintain patient safety across different states and health care systems. Traditionally, the responsibility has fallen on individual practitioners to elicit detailed oral histories during their pre-anesthesia assessments, or on the use of “hardware” such as hand-held notes, allergy cards, or medical ID bracelets. In the digital age, patients expect that different health care organizations can securely share the critical details of cases via their electronic health record (EHR) systems, using a functionality known as interoperability. However, in practice, this rarely occurs. One recent survey even reports that 89% of health care organizations still use fax machines (asamonitor.pub/33WuZFN). Despite the best efforts of its proponents and the increasing emphasis on remote access as a

result of the restrictions imposed due to the COVID-19 pandemic (*Anesth Analg* 2020;131:340-4), digital health continues to lag at least 10 years behind household consumer technology (asamonitor.pub/2PMZ2HO).

Current electronic medical records have evolved with features that can recognize and mitigate some of the human factors that are known to contribute to patient safety incidents. Repetitive reminders such as allergy banners, alerts, and prescribing checkpoints can seem tedious in everyday practice. Still, this strategy for reducing harm through easy access to vital individualized safety information is now widely accepted as worthwhile. Although these technological patient safety nudges have improved intra-organizational systems, there is still no universally available digital method for securely transferring electronic medical records when two or more organizations have responsibility for the care of a patient.

Health Insurance Portability and Accountability Act (HIPAA, 1996) regulations around data privacy are frequently cited as a reason for a conservative approach to digital information sharing. The regulations were further strengthened in 2009 by the HITECH (Health Information Technology for Economic and Clinical Health) Act and now carry a maximum penalty of \$1.5 million for serious patient privacy violations. These hefty fines and the associated unfavorable media coverage leaves most health care organizations fearful of sharing data with any entity that they cannot directly control (asamonitor.pub/31JwnZR). This outlook has become somewhat counter-productive to the aims of the HITECH Act, which provided \$48 billion in federal investment to promote the meaningful adoption of information technology. The case described above clearly indicates how sharing care information between providers is useful for life-saving patient safety.

The balance between the protection of patient data and permitting essential access for care providers care is demonstrated by the patient experience of pointless and repetitive questioning and re-investigation when notes aren't available versus the exposure of private information on the ward rounds of old where intimate details of an in-patient's condition were discussed at the bedside for all within earshot to hear (*BMJ* 2001;322:283-7). The author of this patient perspective emphasizes her needs very clearly: “I want my [EHR] notes to be strictly confidential but readily accessible to those who need them.”

One of the aims of HIPAA was to empower patients to share the management of their medical record, by the provision of the “Right of Access,” the requirement for covered entities (asamonitor.pub/3auJ8LT) to provide patients with a copy of their health care record information in a “form and format” of their choice “if it is readily producible” (asamonitor.pub/3gQy0ev). For many health care organizations, “readily producible” currently means only in paper-based hard copy. All but the newest practitioners will know the difficulty of navigating reams of paper-based notes, and it is certainly impractical to expect the family of a child with a complex background to carry several hundred printed sheets to every episode of care.

In the same way that many of us have chosen to reduce a wall of books or a tower of CDs to a portable digital format that we can access everywhere

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through any smartphone or computer, digital health has developed a universal method for patients and providers across different organizations to access records. The type of digital connection point that facilitates inter-system digital communication is known as an application program interface (API). The 21st Century Cures Act (asamonitor.pub/2PKQDVf) promoted the use of SMART on FHIR (N Engl J Med 2009;360:1278-81), a free, open, and standards-based universal API, by making it a requirement for certification of a system by the Office of the National Coordinator for Health Information Technology.

This universal interface means that health care applications have a shared method to transfer EHR information into portable and secure apps and to give appropriately sanctioned access to health care records from hundreds of health care systems. Patients can request unique access codes from each entity holding their data and pull all of their records into one app where they are empowered to choose to share it with third parties, such as providers in another health care organization. Apple, Google, and Microsoft are

among many technology developers to incorporate this technology into their consumer products. The Epic EHR has chosen a different path to make data available to outside providers, with its Share Everywhere tool (asamonitor.pub/33OLXpD). This system also allows patients to grant access to their records for any health care provider with internet access but uses a different method to the SMART on FHIR standard. Cerner works with cross-industry associations and has chosen the DirectTrust standards for interoperability (Appl Clin Inform 2018;9:205-20), which work with FHIR for data exchange.

If digital external medical records were accessible for this case, the clinical team would have been able to verify details of the prior hypotensive episode almost as easily as they could check the EHR of their own organization. As the case stood, the provider had to make the decision to proceed with the case based on a judgment that the information available indicated a low risk of an adverse event. Alternatively, they would have to delay the scan and embark upon the frequently frustrating process of obtaining clinical notes from "St. Elsewhere's." The provider would know that there was a chance the information

requested would not arrive in time to perform the scan that day and that this could delay crucial decisions about the child's cancer treatment. To many anesthesiologists, this is a familiar dilemma.

This case could illustrate that not all providers and patients are aware of the availability and clinical utility of interoperable Personally Controlled Health Records (PCHRs) (BMC Med Inform Decis Mak 2007;7:25). More information might have been available on the day of this devastating event if staff at either hospital knew to direct the patient's family to download a suitable application for information sharing, or if there was a general public awareness of the presence, value, and security of digital medical record sharing methods. As yet, they may

not be an option for every case and for every EHR system, but asking the question of the availability of interoperable digital notes is a highly recommended starting point.

We wish to thank our colleagues who submitted this case; we appreciate the opportunity to examine the benefits of how this developing area of digital health can improve care and communication. The presence and development of interoperability in health care is something that all patient safety advocates should consider important, including when commissioning or upgrading EHR systems. The benefits extend far beyond this instance of incomplete documentation, but it is difficult to imagine a more stirring motivation to call for improvement. ■

Review of unusual patient care experiences is a cornerstone of medical education. Each month, the AQI-AIRS Steering Committee abstracts a patient history submitted to the Anesthesia Incident Reporting System (AIRS) and authors a discussion of the safety and human factors challenges involved. Real-life case histories often include multiple clinical decisions, only some of which can be discussed in the space available. Absence of commentary should not be construed as agreement with the clinical decisions described. Feedback regarding this article can be sent by email to [airs@asahq.org](mailto:airs@asahq.org). Report incidents or download the AIRS mobile app at [www.aqiairs.org](http://www.aqiairs.org).

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