

Foreword

Many years ago when I was a medical student, computer technology was sufficiently advanced that we were told that by the time we finished our residencies the paper record would have gone the way of the dinosaurs. That was a bit short of 4 decades ago. Meanwhile, we have waited while interminable arguments and obstacles have given lie to that promise and nearly extinguished hope. Earlier on the day I am writing this, I finished training for the new electronic health record (EHR) system being adopted by my hospital. I feel like Moses looking into the Promised Land and am concerned that at the current rate of progress, the full value of the promise may be denied me, as it was to him. Between my days as a medical student and now, I have written database software to aggregate quality and outcomes data as well as and suffered through the inaccurate and cumbersome process of acquiring data from reports that were handwritten by anesthesia providers. In 7 years as chair of my hospital's Medical Records Committee, I failed miserably to get the hospital to adopt computerized records. As a consequence, my years as my hospital's Associate Chief of Staff for Quality Management was a frustrating experience attributable to the lack of electronic records that would have made data extraction practical and data-driven quality improvement a reality.

While this was happening, my department developed a user-friendly, electronic preoperative evaluation system that actually made money by facilitating accurate coding and a separate wonderful intraoperative electronic anesthesia information management system (AIMS). It was built on top of a database that could be interrogated and could aggregate data. Both were discarded before they could be integrated because they did not come from a major company and depended on a couple of individuals for support. This was not unreasonable, but the replacements were not as useful.

The characteristics of robust EHR systems include avoiding redundancy by recording of one fact, in one field, at one time, in a well-structured database that supports the clinical record eventually seen by the user. Why enter a fact, such as a date of birth, more than once, just because it is collected in many places? In our institution, we briefly entertained the idea that a database was not needed and that data could be extracted from narrative text, such as a dictated operative report. This concept was actually advocated as the best way to acquire data. For a time, it appeared we were about to go down the rabbit hole. In short, chaos abounded.

I expect that the story of my institution is all too common and that we anesthesiologists have come frustratingly close more than once to a solution, only to lose the thread. However, I believe we are near the convergence of capacity, technology, and necessity to mandate the widespread adoption of meaningful electronic records, including AIMS. With this comes the ability to support accurate record-keeping needs and the tools needed to extract meaningful structured data to allow us to make intelligent improvements to quality and outcomes. I believe this is happening now, after such a long latency period, because it must. Changes in payment are driving changes in practice, and examples show that insurers, both government and private, are doing this intentionally to contain costs. But, without data to support decision-making, we will be engaged in a futile pursuit of the most efficacious practices leading to the best outcomes, least complications, and consequently the most effective use of resources.

We cannot escape the absolute fact that without the massive aggregate data such as those provided by an AIMS to data repositories such as the Anesthesia Quality Institute or even local repositories, meaningful data-driven improvements will be hard if not impossible to accomplish. To support data registries, there must be a flow of robust, consistent, and well-defined data for local strategic planning and to feed larger repositories such as the National Anesthesia Clinical Outcomes Registry. Because the operating room is the source of the highest concentration of data per second, AIMSs are at the front end of this process.

This white paper is an introduction to rules of the road for AIMSs and can become the foundation for data-based decision-making that drives quality improvement, better outcomes, greater efficiency, science-based practice guidelines, public policy, and cost containment. Put another way, it is also a lever by which we can move our colleagues, administrators, lawmakers, and regulators to grasp the critical and indispensable role we play in safe and effective surgical care. It is time to move forward while our future is still in our hands.

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