Chapter 8

Bring Out Your Data: The Evolution of the National Anesthesia Clinical Outcomes Registry (NACOR)

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ABSTRACT

Recent healthcare legislation, financial pressures, and regulatory oversight have increased the need to create improved mechanisms for performance measurement, quality management tracking, and outcomes-based research. The Anesthesia Quality Institute (AQI) has established the National Anesthesia Clinical Outcomes Registry (NACOR) to support these requirements for a wide-range of customers including individual anesthesiologists, anesthesia practices, hospitals, and credentialing agencies. Concurrently, the availability of increased digital sources of healthcare data make it possible to capture massive quantities of data in a more efficient and cost-effective manner than ever before. With NACOR, AQI has established a user-friendly, automated process to effectively and efficiently collect a wide-range of anesthesia-related data directly from anesthesia practices. This review will examine the issues guiding the evolution of NACOR as well as some potential pitfalls in its growth and usage.

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INTRODUCTION

As a by-product of healthcare delivery in the United States (US), vast amounts of patient care data are collected and stored in a digital format by an increasingly broad range of institutions and organizations. At the same time, local, national, and medical specialty-based efforts to evaluate and improve patient outcomes have a need to access this data in order to establish and monitor performance measurements, conduct health-related research, power clinical decision support systems, and drive service planning. With the increasing emphasis on delivery of effective and efficient healthcare in this country, the need for integration of a data infrastructure designed to support quality measurement within healthcare systems has been recently highlighted in an Institute of Medicine (IOM) report (Committee on Redesigning Health Insurance Performance Measures, Payment, and Performance Improvement Programs, 2006). While their recommendation for the creation of a “National Performance Measurement and Reporting System” has yet to be acted upon, many organizations are pursuing similar goals within a more narrow clinical focus. The development of health-related data warehouses has become a major focus of these organizations as technological advances such as inexpensive data storage, improved software capabilities, and affordable processing capacity are more readily available. At the same time, the high variability in formatting, storage, taxonomy, and planned usage has created significant challenges in the integration of available data stores. In this paper, we will review some of the approaches taken in health-related data warehousing and a more detailed look at the development of the National Anesthesia Clinical Outcomes Registry (NACOR) which attempts to balance some of the challenges inherent in the handling of healthcare data. We will review the clinical and public need for NACOR, technical considerations for the creation of an anesthesia data warehouse, and potential problems related to data acquisition and utilization within the NACOR model.

Currently, there are dozens of clinical outcome registries collecting healthcare-related data. Most of these clinical data warehouses are narrowly focused on a specific topic area and serve a restricted user base. Their approach to organization, validation, and utilization of information within their registries varies from a comprehensive, labor intensive, and highly validated implementation to a more general, passive, data collection approach. As an example, one of the more comprehensive programs is the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) which was one of the first national, validated, outcome-based, and risk-adjusted multispecialty programs for the measurement and improvement of the quality of surgical care (Ingraham, Richards, Hall, & Ko, 2010). Participants in the ACS NSQIP contribute to a prospectively collected, peer controlled database (DB) that is populated with 136 variables collected by trained surgical clinical reviewers from a sampling of major surgical cases. Through the inclusion of preoperative risk factors, intraoperative information, and 30-day postoperative morbidity and mortality outcomes, participating facilities are able to benchmark their performance against similar institutions, target areas for improvement, and monitor quality improvement initiatives. With access to standardized data collection, data monitoring and validation, report generation, data analysis, and feedback, hospitals enrolled in the program have been shown to improve the quality of delivered care over time (Hall et al., 2009). Currently, over 200 institutions participate in ACS NSQIP, however, only a portion of the potential cases are actually recorded based on a systematic sampling strategy due to a lack of automated data solutions and the requirement to manually review and record a significant portion of the data at most sites. Since the overall strategy employed in the program is to create a “high-quality clinical DB” (Black, 1999), the cost to participate can easily
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