

So What Have We Learned? An Update From the AQI

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The Anesthesia Quality Institute (AQI) was chartered in 2009 with the lofty goal of improving the practice of anesthesia. The means to this end is the National Anesthesia Clinical Outcomes Registry (NACOR), which began collecting case-based data from participating practices in January 2010. The growth of data in NACOR has been exceptional: the 1 millionth case was entered in May 2011. As you read these words, the AQI includes more than 125 participating practices, 3,500 anesthesiologists and 2 million cases. But collecting data is the easy part. The hard part is turning it into useful information. So what have we learned? And how has it helped us?

The Average Registry

Like other registries – the National Surgical Quality Improvement Project, the Society for Thoracic Surgeons database, the National Trauma Data Bank – the AQI provides regular quarterly reports to its participating practices. These reports include national and peer-group benchmarks for administrative variables (e.g., duration of common cases), demographics (e.g., distribution of ASA Physical Status) and outcomes (e.g., serious adverse event rate). Like other registries, the AQI provides aggregated national data for society leaders, academics and individual members. The AQI has answered more than three dozen specific queries in 2011, and anticipates hundreds in the coming months.



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NACOR is not the average registry, however. Passive collection of electronic clinical data has let us gather more cases at a lower cost than any of the traditional registries mentioned above, but this model presents unique challenges at the analytic and reporting end of the process. NACOR data is far more heterogeneous and context-sensitive than data in more focused registries, and we must take great care not to report data that are overly biased or underpowered. This model is an important one for the future, and government agencies and other professional societies are beginning to take notice. In the past six months the AQI has participated in several national initiatives for health care registries. The AQI and anesthesiology in general were recognized as leaders in patient safety by the Agency for Healthcare Research and Quality at a meeting of designated Patient Safety Organizations convened in July in Washington. The AQI is participating in a National Quality Forum review of perioperative process and outcome measures for public reporting. And the AQI is a leader in an American Medical Association effort to create a National Quality Registries Network. Representatives of the Orthopedic, Oral and Maxillary Surgery, Otolaryngology, and Gastroenterology Societies have inquired about the AQI model as they design their own efforts.

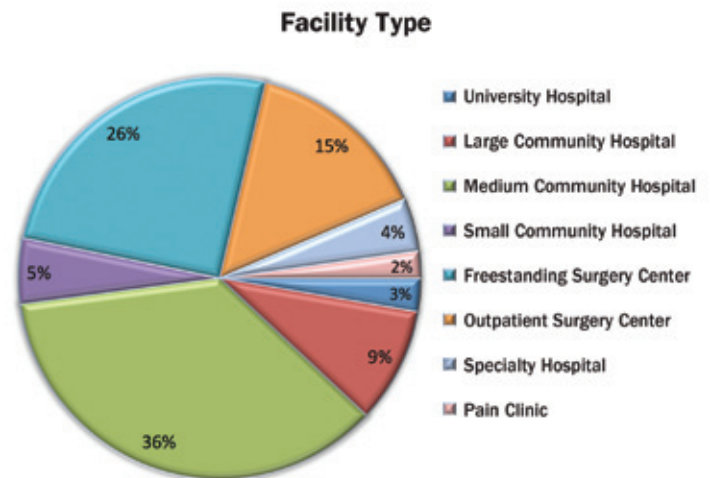


Figure 1: Distribution of facilities in NACOR

Large Community Hospital (over 500 beds); Medium Community Hospital (100-500 beds); Small Community Hospital (less than 100 beds)

The Average Anesthesia Practice

It turns out there's no such thing. AQI participant groups range in size from one to 187 anesthesiologists. The median group includes 55 providers (33 anesthesiologists), of whom 13 percent work part time. The median group provides anesthesia services in nine different facilities, but this ranges from 1 to 77, and includes university hospital operating rooms, large-, medium- and small-community hospitals, freestanding surgery centers, specialty hospitals and surgeon offices (Figure 1). The average group does 3,000 cases per month and has experienced a slight increase in case volume over the past two years. Besides varying in size and composition, anesthesia practices vary widely in their use of electronic systems. As an interested party, the AQI now works with 37 different software vendors, including seven that produce anesthesia information management systems (AIMS). The number of data points per case contributed to NACOR ranges from 8 to 80, depending on the sophistication of information technology resources in the practice.

Practices also vary in their adaptation of digital record-keeping. Many groups still do their documentation on paper, with electronic records generated only at the time of professional billing. Other groups – currently about 35 percent of AQI participants – have AIMS, but the scope and formatting of AIMS data can vary widely. While most AIMS include assessment of major safety outcomes at the time of PACU discharge, this is far from the complete picture of perioperative care that we would like to have. The best assessment of 24-hour postoperative outcome comes from the few practices with dedicated anesthesia QM software. Sixty-five percent of participating practices work with nurse anesthetists (NAs), at a median coverage ratio of about 1:3. Ten percent of practices work with anesthesiologist assistants (AAs). NAs and AAs are most likely to be employed by the group rather than the hospital. Seventy percent of AQI

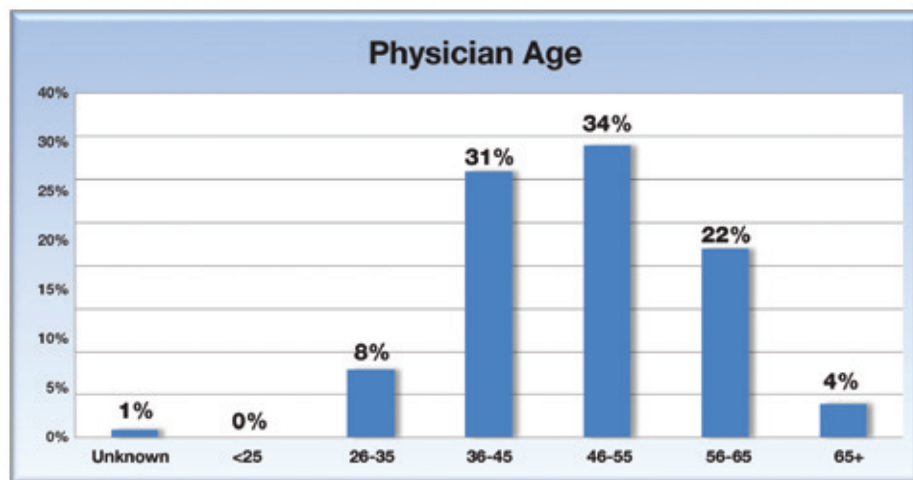


Figure 2: Age Distribution of AQI Participating Anesthesiologists

participants receive a mean of 19 percent of their gross income in the form of direct contracting with a facility or surgical group. Government agencies (Medicare and Medicaid) account for 34 percent of billings, private insurance for 40 percent and “self-pay” for 6 percent.

The “Average” Anesthesiologist

Of course we are all unique individuals! But if a median NACOR anesthesiologist existed, he would be 49 years old and would have spent about 10 years in his current practice (Figure 2). He would be an ASA member (97 percent of all AQI participants!), would be Board Certified (73 percent), and would work about 50 hours a week and cover 87 cases a month. And yes, he would be a he. Seventy-five percent of participating anesthesiologists are male, although we expect this to change; in 2011 more than 50 percent of medical students and about 40 percent of CA-1 anesthesia residents are female.

The Average Case

There is no such thing as an average anesthesia case! But the most common case is a cataract excision, followed by colonoscopy, upper abdominal laparoscopy, electroconvulsive therapy and

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total knee replacement. Other common cases are epidural analgesia for labor and delivery, knee arthroscopy, myringotomy tubes, tonsils and Cesarean section. General anesthesia remains the most common, although a large number of short outpatient cases are performed with monitored anesthesia care

varies from as little as 2 percent in some facilities to as high as 20 percent in others. This benchmark should be taken with a grain of salt, however, as the definition of this measure also varies widely.

Few anesthesia practices are routinely assessing patient satisfaction, and even when these data are collected it may not be digitized, may not be linked to a specific anesthesia record, and may not be reported to the AQI. From the standpoint of public reporting, this is an area where our profession has some work to do. The federal government is already engaged in random satisfaction sampling of surgical patients, and some of their questions concern the anesthesiologist. These data have not yet been summarized or presented, but it is only a matter of time before this changes. It would behoove us to learn for ourselves whether the average patient is satisfied with our work, and if not, what we can do to improve.

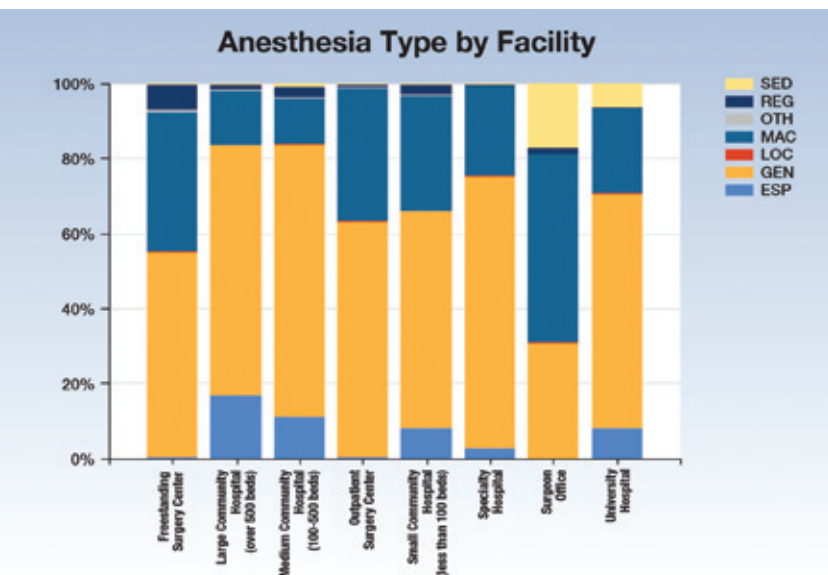


Figure 3: Anesthesia Technique Base on Facility Type

(Figure 3), especially in surgery centers and surgeons' offices. Overall, outpatient cases outnumber inpatient by about 3 to 2.

Patient age distribution varies widely based on facility and procedure, as does the ASA Physical Status. Average surgical case times vary based on the type of facility where the case was performed (Figure 4). Women outnumber men among our patients, by about 55:45. This likely reflects the greater life expectancy of women, since surgery is more common in older patients.

The Average Outcome

We have made anesthesia a safe and effective process. From those practices reporting outcome information to NACOR, the unadjusted chance of a serious adverse event is about 6 per 1,000, and the risk of death is less than 1 in 10,000. Considering that 7 percent of all the cases done in medium and large community hospitals (including university hospitals) are ASA Physical Status 4 or 5, this is a remarkable achievement. Among less serious outcomes, the rate of postoperative nausea and vomiting

continue to improve. The AQI exists to create the measuring tape for our specialty, and to hold it up so that every anesthesia group and every practitioner can assess his or her own work and address their own areas of weakness. This is our path to better patient outcomes and more efficient perioperative care.

Summary

We know more than we did two years ago about the size, shape and scope of our clinical practice. We know that we are safe, and that we are busy, but we don't know if we are appreciated. Without measurement it is unlikely that we will

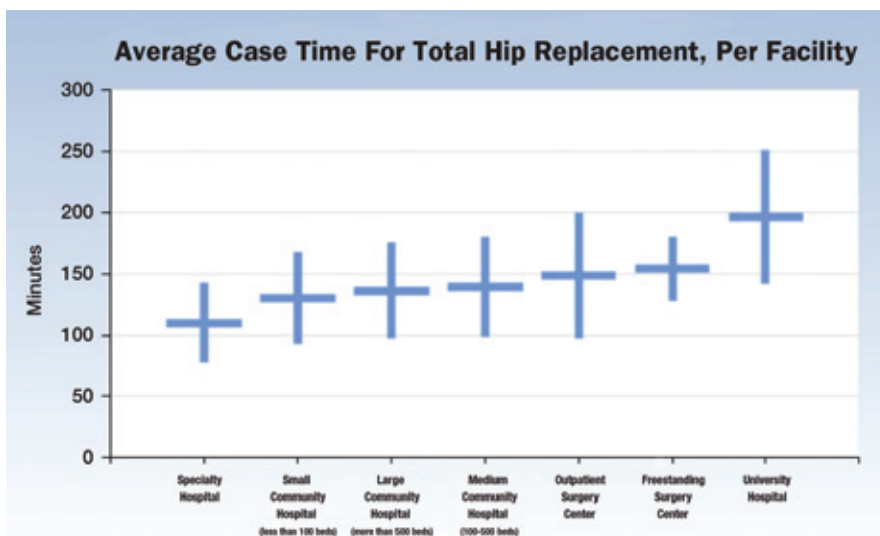


Figure 4: Average and Standard Deviation of Surgical Case Time for Total Hip Arthroplasty Based on Facility Type