

Turning Registry Data into Benchmarks

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Introduction

We live in the Information Age. We swim in a sea of numbers, and like sharks we must stay in constant motion if we don't want to drown. Numbers guide our clinical practices, everything from lab values to vital signs to medication doses. Numbers describe our business, from CPT codes to billing dollars to collection ratios. And numbers guide our teaching efforts as well: case numbers, faculty evaluations, and in-service exam scores. The numbers we have are as limitless as the trees in a forest, and sometimes pose a similar problem: making it impossible to see the big picture. How do we turn all of that data into actual information? How do we take the hundreds of bits of data our practices generate each day and turn them into a pattern that we can use to further our real purposes: better patient care, more efficient clinical practice, and improved education? Here are some thoughts on how to think about it at the local level and how the AQI is thinking about it nationally.

Data? What Data?

Every anesthesia practice generates a lot of data. Smart anesthesia practices know how to put it to work. This includes 'administrative data' collected for billing and collections, hospital electronic record data gathered for clinical purposes, outcomes data collected for quality management, and even research data from prospective studies. More importantly, smart practices recognize that this data is interchangeable – that business data can be used for quality management, that clinical data can be used for research, and that all of it can be used to improve patient care.

On the national level, this is the same philosophy that motivates the Anesthesia Quality Institute (www.aqihq.org). Every patient is a data point, and every piece of information has some value. Further, each piece of data gains value with the addition of every other piece of data. This is because new knowledge comes from interconnections, from putting together two pieces of data that haven't been put together before, to learn something new. The AQI is building the National Anesthesia Clinical Outcomes Registry to be the largest possible repository of anesthesia case data and clinical outcomes, and NACOR is already an important source of benchmarks for participating practices.

Every piece of information a practice submits to NACOR is reported back to them on a regular basis. The AQI reporting server organizes this information and presents it in a useful form. Top-level 'dashboard' reports lead to more detailed graphs and tables that show the trend of data over time, and allow for drill-through down to the level of individual facilities, services, cases and providers within the practice. Filtering allows for creation of very specific data sets (e.g. all female patients age 18-49 undergoing laparoscopic cholecystectomy on an outpatient basis) which can be used by practice administrators to address issues as they arise.

But most important, reporting from NACOR includes benchmarks derived from the larger data cube composed of all recorded cases. So for each metric where enough data exists, from enough different centers, the practice can also see how they stack up against their peers. Filtering can be applied to the aggregate data as well, allowing for very good comparisons across practices. As NACOR grows in breadth and depth, the number of benchmarks which can be presented will increase steadily, and the reliability of those benchmarks will steadily improve. It is likely that within the coming decade anesthesia practices will have an unprecedented – and unimpeachable – understanding of their own performance. What should we do with this ability?

Reporting Quality Management Data

Most anesthesia groups provide good patient care, as do most anesthesiologists. We all learn from our experiences, and are constantly motivated to make our outcomes better. Systematic use of data can help this process in two ways. First, it can illustrate what is possible in other systems, and second, it provides a means to track improvements over time. Not surprisingly, this process works. Humans are naturally motivated to compete, and regular assessment provides them a measuring stick to compete against. Over time, outcomes will predictably improve. This is one of the central concepts of quality management. The biggest improvement in outcomes is often achieved without any effort more strenuous than creating an outcomes report and publishing it. Human nature does the rest. But there is a flip side to this as well. Without such a measuring stick, no improvement is possible.

So regular assessments are essential, and worth a little thought. There are several ways in which the process can be enhanced. Individual-level data should generally be kept private, but the occasional public embarrassment can be a useful tool. Every Department has a few faculty members who can't be bothered to complete their resident assessments. Why is this tolerated? How about posting their names in the anesthesia workroom, or in regular e-blasts? How about considering this a requirement for incentive payments?

For outcomes, private reporting is usually preferred. Benchmarking can greatly enhance this process, even by showing the individual's performance against something as statistically crude as a single national rate of postoperative nausea and vomiting. The more precise the benchmarking can be made, the more powerful it becomes. Consider a benchmark rate from similar facilities, doing similar cases in similar patients, in the same part of the country. Showing the rate of PONV against the rates of every other member of the same department (deidentified, of course) is the most powerful of all. And the added benefit to the QM officer is that the more specific the benchmark becomes, the less risk adjustment is necessary. After all, members of the same practice are already taking care of the same populations of patients. (And if they're not, they know better than anyone outside the program what the differences really are!)

System and Program Metrics

While individual feedback is at the heart of performance metrics, the value of this data does not stop there. It should be aggregated, trended, and combined with other data to provide

information about the practice as a whole. A single intraoperative CVP value has little meaning to a clinician, but a series over time can reveal a lot about the patient's cardiovascular status. A single quality metric means nothing, but a series over time can indicate a trend, and similar trends in multiple metrics can indicate important system problems. One patient having a bad outcome is a tragedy; three in a week is a call to action.

The practical lesson for the Quality Manager is clear. Get the data. Get it digitized. Aggregate it. Trend it over time. Compare it to others. Look at the results. React accordingly.

Finding Holes in the Program – Benchmarking for Fun and Profit

It's important to remember that in the land of the blind, the one-eyed man is King. So what if three patients every day throw up after surgery? If the national average is 5 a day then we should be celebrating! Trending over time is one way to make sense out of data. Another is external comparison, or benchmarking. The QM officer should seek out every possible external measuring stick. Simple things like the number of cases done, the utilization rate of the OR, and the readmission rate after outpatient surgery are obvious comparators and easy data to find. Other comparisons might require some imagination, but in many cases if you can think of the question you can also think of where to find the data. Are your residents more satisfied than residents in other specialties? Is your turn-over time faster or slower than similar practices? Do you reintubate as many patients in the PACU?

Benchmarking is where the interaction between QM data and practice improvement becomes clear. This is because every system deficiency implies an educational opportunity. And we all understand that education does not stop at the end of residency. Is your rate of postoperative nausea and vomiting higher than it should be? There are probably systematic reasons for this, but one of them is likely to be provider education. How much do your providers know about PONV? How well do they provide prophylaxis? Do they know how PONV impacts patient satisfaction? Are you considering the use of NK-1 antagonists? Education is the effector arm of the QM program, responsible for fixing the problems that the data demonstrates. This relationship is true all the way to the national level, where data from the AQI is used by ASA's education department to design and market products, and ASA educational modules use the AQI to harvest data on performance improvement. The newly developed modules for Maintenance of Certification in Anesthesiology (Part IV – Personal Practice Assessment and Improvement) will soon illustrate the power of this collaboration.

Conclusion

The most important purpose of the AQI is creation of benchmarks, because we believe that providing the specialty of anesthesiology with a measuring stick it can use to take stock of itself will lead to sustainable and continuous improvements in anesthesia care. None of us want to be below average, and with NACOR we won't be – at least compared to other medical specialties!

