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CORR Insights®: The ACS NSQIP Risk Calculator Is a Fair Predictor of Acute Periprosthetic Joint Infection

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Where Are We Now?

The study by Wingert and colleagues is a timely one given the current focus on value-driven healthcare by both government and industry leaders. These efforts include the Physician Quality Reporting System [4], value-based purchasing, the Surgical Care Improvement Project [14], and the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) Surgical Risk Calculator [3], to name a few.

Although the responsibility for making quality improvement changes remains with the individual sites associated with ACS NSQIP, the administrative body provides support for its 743 participating hospitals worldwide [2] in terms of the reporting of successful interventions, provision of best practices, national meetings, and monthly supportive conference calls with the surgeon champions and clinical reviewers [9]. In comparison, the stated goal of legislated quality improvement programs (Physician Quality Reporting System and the

Surgical Care Improvement Project, for example) are to drive future modifications of our surgical treatment approaches and to reward hospitals and physicians who achieve high-quality and efficient care. These legislated programs also tie quality to cost-containment and are budget neutral by law.

The goals to improve quality of care are admirable and although many would seem to result in better quality of care, they generally do not provide evaluable data or validated outcomes documenting that quality has been measurably improved.

In 2015, Congress passed the Medicare Access and CHIP Reauthorization Act (MACRA) [11]. This legislation repealed the Sustained Growth Rate (SGR) formula (at a time when physicians were facing a 21% SGR cut in provider payment [10]) and replaced it with the Merit-Based Incentive Payment System and Alternative Payment Models. Additionally, many of the already existing quality improvement programs fell under the umbrella of this legislation. Although MACRA repealed the pending 21%

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CORR Insights

SGR cut in reimbursement, it was replaced with financial penalties for noncompliance of built in quality initiatives, which are scheduled to increase up to 9% [10]. The MACRA legislation linking quality of care to penalized reimbursement has already undergone major changes in 2016, including a 962-page revision [5].

These mandated programs do not provide mechanisms that generate evaluable data that can validate quality improvement. Consider the Universal Protocol for Preventing Wrong Site, Wrong Procedure, and Wrong Person Surgery. Developed initially by the American Academy of Orthopaedic Surgeons in 1997 and implemented in 2003 by the Joint Commission, this initiative became mandatory for all accredited surgical facilities in 2004 [8]. Unfortunately, the program has not worked. In 2012, the American Board of Orthopedic Surgery (ABOS) published 11 years of data (1999 to 2010), reviewing 1,291,396 cases. The review found a total of 71 wrong-site surgical procedures and revealed that the rate of wrong-site surgical procedures was not different before and after implementation of the Universal Protocol mandate [6]. Earlier this year, the Joint Commission published statistics finding an average of approximately 101 wrong-site procedures per year from 2004–2015 [13]. Although required for ABOS certification and hospital

accreditation by the Joint Commission, it does not appear that adherence to the Sign Your Site/Universal Protocol reduces the risk of the problem in question [8].

As with other administratively-derived and legislatively-mandated quality of care improvements, the question remains: Where is the evidence that this program improves patient safety? Do these programs simply add to the time, cost, and administrative overburden that surgeons have to deal with daily?

The current state of affairs is that much of our future in improving quality improvement is in the hands of theoretical quality improvement programs engineered by administrators, governmental officials, and consultants rather than caregivers. In contrast to such mandated tools linked to reimbursement, the ACS NSQIP Surgical Risk Calculator may be a step in the right direction, as it attempts to put our future of determining real quality improvement for our patients back into our own hands.

Where Do We Need To Go?

It is important for us to test the published results of any new methodology in order to determine its validity within our specialty. The ACS NSQIP Surgical Risk Calculator has not undergone

the scrutiny of scientific, evidence-based evaluation for acute periprosthetic joint infection and many other procedures that are routinely performed in orthopaedic surgery. In fact, the risk calculator has been criticized for inaccuracy across all surgical procedures when compared to the surgical outcome data collected from the University Health System Consortium database [12].

Nevertheless, we should not dismiss the project out of hand. Currently, any surgeon can use the ACS NSQIP Surgical Risk Calculator online and enter data for each patient. Consequently, each surgeon that participates becomes a stakeholder and this participation may provide us with the data required to deliver measurable quality improvement.

However, before accepting the implementation of the risk calculator or developing our own quality data tools, orthopaedic surgeons should demand evidence-based data to use in providing the improved quality that everyone is seeking. In this case, the ACS NSQIP Surgical Risk Calculator could be modified to generate current validated results before we are required to perform such patient data collection for another mandated theoretical quality improvement program. Orthopaedic surgeons can join the ACS NSQIP and collaborate on such efforts, as other specialty societies

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have, or we can develop our own tools to do the same. For example, in 2009, the AAOS Patient Safety Committee initiated months of communications with the Joint Commission, and established a quality safety platform funded in an effort to launch data and quality tool development and while also recommending changes to the Joint Commission and its Universal Protocol modifications [1].

If we do nothing, I believe theoretical methodology will again develop into another mandated program. Then the question is: Will it provide a useful and valid cost-effective tool for orthopaedic surgeons, or is it simply another new mandated program based on “theoretical rationale” requiring more mandated reporting obligations that are linked to reimbursement? If this or other theoretical rationale does not yet have an evidence base to support its use in orthopaedic surgery, its predictive value must be determined for our specialty prior to implementation.

It is incumbent on our physician community to determine whether these programs and all of our tools are relevant to patient care.

How Do We Get There?

The Patient Protection and Affordable Care Act [7] created several new Medicare programs intended to

improve the quality of healthcare through pay-for-performance. These pay-for-performance initiatives have been with us for a number of years, but they have done little to provide the data that documents actual improved quality. The only way to ensure that we are measured by evidence-based quality of care is to become a stakeholder in and own the validated processes that can improve the quality of the care we deliver. By doing so, we would justifiably be held accountable to collected data that pertain specifically to orthopaedic procedures and quality of care.

The ACS NSQIP risk calculator is a step forward in the development of tools that can generate data to measure quality of care. Although criticized in some quarters, and providing only fair results in the current study, orthopaedic surgeons should help improve the ACS NSQIP Risk Calculator and similar tools in order to continue to develop evidence-based data that can be utilized to improve measurable quality improvement. We must take back and own the processes that allow us to refine the care we provide for our patients. If we fail to do this, we can expect to spend our time on the mandated reporting of data into theoretical quality improvement programs that do not improve health.

References

1. American Academy of Orthopedic Surgery. Advocacy now. 2009

federal legislative and regulatory round-up. Available at: <http://www.aaos.org/CustomTemplates/Content.aspx?id=22438>. Accessed May 23, 2016.

2. American College of Surgeons National Surgical Quality Improvement Program. ACS NSQIP Hospitals. Available at: <https://www.facs.org/search/nsqip-participants?allresults=>. Accessed May 27, 2016.
3. American College of Surgeons National Surgical Quality Improvement Program. Surgical risk calculator. (<http://riskcalculator.facs.org/RiskCalculator/>). Accessed May 23, 2016.
4. Centers for Medicare & Medicaid Services. Physician Compare. Physician Quality Reporting System. About PQRS (<https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/PQRS/>). Accessed May 23, 2016.
5. Federal Register. Medicare Program; Merit-Based Incentive Payment System (MIPS) and Alternative Payment Model (APM) Incentive Under the Physician Fee Schedule, and Criteria for Physician Focused Payment Models. Proposed Rule by the Centers for Medicare & Medicaid Services on 05/09/2016. Available at: <http://federalregister.gov/a/2016-10032>. Accessed May 23, 2016.
6. Hempel S, Maggard MA, Nguyen D, Dawes AJ, Mlake-Lye IM, Beroes JM, Shanman R, Shekelle PG. Prevention of wrong site surgery, retained surgical items, and surgical fires: A systematic review. Available at:

CORR Insights

- <http://www.hsrd.research.va.gov/publications/esp/wrong-site-REPORT.pdf>. Accessed May 27, 2016.
7. H.R. 3590 (111th): Patient Protection and Affordable Care Act of 2010. (<https://www.govtrack.us/congress/bills/111/hr3590/text>). Accessed May 23, 2016.
  8. James MA, Seiler JG 3rd, Harrast JJ, Emery SE, Hurwitz S. The occurrence of wrong-site surgery self-reported by candidates for certification by the American Board of Orthopaedic Surgery. *J Bone Joint Surg Am*. 2012;94:e2.
  9. Maggard-Gibbons M. Use of report cards and outcome measurements to improve safety of surgical care: The American College of Surgeons National Quality Improvement Program. *BMJ Qual Saf*. 2014;23:589–599.
  10. Manchikanti L, Staats PS, Boswell MV, Hirsch JA. Analysis of the carrot and stick policy of repeal of the sustainable growth rate formula: The good, the bad, and the ugly. *Pain Physician*. 2015;18:E273–292.
  11. Medicare Access and CHIP Reauthorization Act of 2015.42 USC 1305. Available at: <https://www.congress.gov/114/plaws/publ10/PLAW-114publ10.pdf>. Accessed May 23, 2016.
  12. Simorov A, Bills N, Shostrom V, Boilesen E, Oleynikov D. Can surgical performance benchmarking be generalized across multiple outcomes databases: A comparison of University HealthSystem Consortium and National Surgical Quality Improvement Program. *Am J Surg*. 2014;208:942–948.
  13. The Joint Commission. Summary data of sentinel events reviewed by the joint commission. Available at: https://www.jointcommission.org/assets/1/18/2004-2015_SE_Stats_Summary.pdf. Accessed May 23, 2016.
  14. The Joint Commission. Surgical care improvement project. Available at: https://www.jointcommission.org/surgical_care_improvement_project/. Accessed May 23, 2016.