An Opportunity to Improve Informed Consent and Shared Decision Making: The Role of the ACS NSQIP Surgical Risk Calculator in Oncology

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Cancer patients are being presented with a growing number of treatment options, many of which involve complex surgical decisions. The informed consent and shared decision-making process provides an increasingly important opportunity for surgeons to provide education, engage patients, make treatment recommendations and tailor perioperative care plans. Patient-specific assessments of operative risk are critical to these conversations. Unfortunately, relatively few resources have been available to help surgeons with these assessments.

The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) has developed the ACS NSQIP Surgical Risk Calculator to provide patients and surgeons with predicted risks for 11 postoperative complications that are tailored to individual patient comorbidities. The tool was developed using data from over 1.4 million cases in ACS NSQIP and can be used for procedures in virtually every surgical subspecialty accounting for 2,500 CPT codes.¹ The surgeon can quickly enter 21 patient characteristics into the ACS NSQIP Surgical Risk Calculator (e.g., age, comorbidities, emergent operation) along with the CPT code for the surgical procedure, and the risk calculator provides a report with the estimated risks of 11 complications after surgery based on

that specific patient's risks. It is publicly available (<http://www.riskcalculator.facs.org>) and includes options for surgeons to e-mail, save, or print patient-oriented reports. Importantly, the Centers for Medicare and Medicaid Services (CMS) will financially incentivize surgeons through the Physician Quality Reporting System (PQRS) starting in 2014 to use the ACS NSQIP Surgical Risk Calculator and document that they have reviewed the results with patients before surgery.²

The ACS NSQIP Surgical Risk Calculator has many applications unique to oncology patients and may improve care in several ways. Moreover, numerous opportunities exist to further incorporate risk prediction into oncology care in the future.

IMPORTANCE OF THE RISK CALCULATOR FOR CANCER CARE

The Institute of Medicine has identified supporting shared decision making, particularly with information on treatment benefits and harms, as a top priority area for providing high-quality cancer care.³ Risk estimation tools are particularly well suited for this. Importantly, risk estimation tools address many challenges unique to surgical oncology patients during the decision making process. Because cancer risk increases with age, cancer surgery patients often have significant comorbidities that may impact their surgical risk. In addition, cancer patients generally undergo planned, elective resections, and may be seen several times preoperatively, providing multiple opportunities for evidence-based education and shared-

decision making incorporating risk estimation tools. Finally, cancer patients may receive multiple planned courses of therapy (e.g., sentinel node biopsy followed by completion node dissection, repeat excision for adequate margins, ostomy takedowns, adjuvant chemotherapy or radiation) that may put them at increased risk for complications at some time during their treatment. Using risk estimation tools to set patient expectations early in their care may help to anticipate complications, decrease anxiety or frustration when complications do occur, and potentially decrease medicolegal liability when complications do occur.

USING THE RISK CALCULATOR TO IMPROVE CARE

The current version of the ACS NSQIP Surgical Risk Calculator may be leveraged to improve care through patient engagement, decision support, and care coordination. First, the risk calculator was specifically designed to provide patient-directed, plain language reports in order to help prompt a discussion of surgical risks for that particular patient. One could imagine that use of risk estimation tools to provide patients with personalized risk predictions preoperatively could encourage their participation in interventions to prevent complications. For example, if a patient undergoing an esophagectomy is presented with data revealing they are at increased risk for postoperative pneumonia, they may be more likely to comply with a preoperative exercise regimen or postoperative incentive spirometer use. The same patient's postoperative and discharge education could be tailored to emphasize signs and symptoms of pneumonia which may allow earlier intervention and prevent progression to respiratory failure.

Second, accurate predicted risks may help patients and surgeons decide whether surgery is the optimal choice when cancer prognosis and comorbidities weigh heavily into the decision. For example, a patient with a small, low-grade retroperitoneal sarcoma and severe cardiopulmonary comorbidities may forego surgery when considering the natural history of a slow-growing tumor and the overwhelming risks of treatment. Without careful education and risk assessment, these patients may pursue surgery because of a poor understanding of their surgical risk, unrealistic expectations for cure, or both. Conversely, accurate risk predictions may encourage primary care physicians, oncologists, and/or surgeons to recommend surgery to patients who are older or have isolated comorbidities that may have been inaccurately perceived as prohibitively high risk.

Third, risk estimation tools can similarly be used when patients present with advanced cancers requiring emergent surgical management. When a patient with widely

metastatic pancreatic cancer presents with a bowel perforation, knowing the empirically estimated risks may inform whether surgery should be performed at all. Providing patients and families with information on elevated risks may help guide decision making in difficult situations and set expectations for postoperative complications and prolonged recovery.

Fourth, risk estimation tools may help with complex decision making when multiple surgical options are available. For example, in certain scenarios a patient with multiple medical comorbidities and breast cancer could potentially be treated equally with mastectomy alone, mastectomy with implant-based reconstruction, or mastectomy with autologous tissue reconstruction. Weighing the surgical risks of each treatment would undoubtedly enhance the decision-making process, particularly if considered in conjunction with the relative benefits of each approach.

Finally, the risk calculator may be helpful for facilitating coordination of care between members of the treatment team. If a patient with pancreatic cancer is at high risk for serious postoperative complications that may prevent them from receiving adjuvant therapy, data on operative risk may be included among other considerations during discussions between surgeons and oncologists about neoadjuvant therapy.

FUTURE DIRECTIONS

In addition to the potential uses described above, there are several ways that the ACS NSQIP Surgical Risk Calculator could be further enhanced to help address gaps in cancer care. The ACS NSQIP Surgical Risk Calculator could be integrated with cancer registries to create a cancer treatment risk tool that would provide patients with their personalized risk for adverse events with each modality of treatment (e.g., surgery, chemotherapy, radiation, and observation). The tool could be used to tailor treatment strategies to individual patients for each step of their multimodality treatment. In addition, it could serve as a resource to set expectations for patients for each phase of their therapy. Ideally, such a tool could be further expanded to provide estimated survival and recurrence information, an oncology prognosis estimation tool that accounts for risks associated with treatment. One could envision a comprehensive tool where a physician can log in and evaluate the benefits and risks of several treatment options using patient-specific predictions for short-term morbidity and long-term outcomes including 5-year survival, recurrence, or long-term treatment complications.

Additional variables may be added to the ACS NSQIP Surgical Risk Calculator in the future to more specifically address cancer patients. The Oncology NSQIP NCI Cancer

Center Consortium (ONNCC), a collaborative of the National Cancer Institute (NCI) centers participating in NSQIP, is currently piloting collection of cancer-specific variables (previous chemotherapy, radiation, or surgery) which will be considered for future versions. Anastomotic leak, although not specific to cancer patients, is a major source of morbidity for all patients undergoing colectomy or proctectomy and will be included in the future, as will pancreatic fistula and many other cancer-specific, procedure-specific outcomes. Finally, ACS NSQIP Surgical Risk Calculator is an ideal platform for including patient reported outcomes, such as incontinence after rectal surgery or arm mobility after axillary dissection. Patient reported outcomes are not currently collected by ACS NSQIP, but have been identified as a priority area of development for cancer care, and one could imagine a risk estimation tool predicting these outcomes in the same way it currently does for morbidity and mortality.^{3,4}

Finally, the risk calculator could be leveraged in the future to help patients decide not only what treatment they should choose, but also where they should go to receive it. A collaborative project funded by the Agency for Healthcare Research and Quality (AHRQ) is incorporating the ACS NSQIP Surgical Risk Calculator into a patient-centered Web site that will provide hospital rankings that are tailored to specific patients on the basis of their comorbidities and the planned procedure.⁵

CONCLUSION

Cancer patients face complex surgical decisions which require careful education and shared decision making, but

there are few resources available that provide data-based risk assessments to guide treatment decisions. The ACS NSQIP Surgical Risk Calculator is a valuable tool that can be used for virtually every surgical procedure to engage patients in their care, facilitate treatment decisions, and improve coordination of care between team members. The current version offers many opportunities to support cancer care. Future development of a cancer-specific risk calculator should focus on incorporating nonsurgical risks and benefits, including cancer-specific comorbidities, survival, and patient reported outcomes.

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