

Quality Assessment in Pancreatic Surgery: What Might Tomorrow Require?

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Abstract

Introduction The Institute of Medicine (IOM) defines healthcare quality across six domains: safety, timeliness, effectiveness, patient centeredness, efficiency, and equitability. We asked experts in pancreatic surgery (PS) whether improved quality metrics are needed, and how they could align to contemporary IOM healthcare quality domains.

Methods We created and distributed a web-based survey to pancreatic surgeons. Respondents ranked 62 proposed PS quality metrics on level of importance (LoI) and aligned each metric to one or more IOM quality domains (multi-domain alignment (MDA)). LoI and MDA scores for a given quality metric were averaged together to render a total quality score (TQS) normalized to a 100-point scale.

Results One hundred six surgeons (21 %) completed the survey. Ninety percent of respondents indicated a definite or probable need for improved quality metrics in PS. Metrics related to mortality, to rates and severity of complications, and to access to multidisciplinary services had the highest TQS. Metrics related to patient satisfaction, costs, and patient demographics had the lowest TQS. The least represented IOM domains were equitability, efficiency, and patient-centeredness.

Conclusions Experts in pancreatic surgery have significant consensus on 12 proposed metrics of quality that they view as both highly important and aligned with more than one IOM healthcare quality domain.

Keywords Quality · Pancreatic surgery · High-acuity surgery

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Introduction

In its 2001 report “Crossing the Quality Chasm: A New Health System for the 21st Century,” the Institute of Medicine (IOM)—one of the three arms of the National Academy of Sciences—defined quality as “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.”¹ The IOM defined “Aims for Improvement” across six domains of healthcare quality, paraphrased here: (1) *safety*: avoiding injuries to patients from care that is intended to help them; (2) *effectiveness*: providing services based on scientific knowledge and refraining from services not likely to benefit; (3) *timeliness*: reducing waits and sometimes harmful delays; (4) *efficiency*: avoiding waste; (5) *patient-centeredness*: providing care that is respectful or responsive to individuals’

needs; and (6) *equity*: providing care that does not vary regardless of personal characteristics (Fig. 1).¹

Despite these recommendations, quality improvement and assessment in high-acuity surgery has largely focused on volume–outcome relationships. Birkmeyer et al. found that in-hospital mortality rates after pancreaticoduodenectomy at low- and very-low-volume hospitals were three- to fourfold higher than at high-volume hospitals. This could suggest that referral to high-volume centers could save a significant number of lives.² Subsequently, the quality improvement organization Leapfrog Group, among others, advocated for an “evidence-based hospital referral” system. Leapfrog Group added pancreatic resection to its list of procedures for evidence-based referral in 2004, and the single measure for referral to a given hospital is based solely on volume. A meta-analysis of the volume–outcome relationship in pancreatic surgery demonstrated a consistent association between high-volume hospitals and lower post-operative mortality rates.³ Among individual high-volume providers, however, there is still significant variability in outcomes of pancreatic resection.⁴

While volume and mortality are important indicators of capability and performance, these measures alone cannot satisfy the multiple dimensions required by the IOM domains of quality. Volume does not directly reflect quality; rather, it is a surrogate for other measures of quality. Of course, patient survival is paramount, but the mortality statistic captures only a small fraction of

the full spectrum of surgical care. Two patients cared for at two different hospitals may both survive their major pancreatic operation, but their outcomes may vary dramatically. For example, they may have variable lengths of stay, follow-up care, integration of services, and suffer (or not) minor or major complications. These variables will profoundly impact their individual overall costs of care. Each patient will have survived, but will they have experienced equivalent healthcare quality? Finally, some patients will succumb after high-acuity surgery despite optimal and undisputed quality of care.

We need to understand and determine what measures of quality beyond mortality and volume might better reflect quality in pancreatic surgery. These measures would include traditional clinical outcomes, as well as process and structural elements of care. New benchmarks must be developed with which to compare already “high-volume” centers—not to fuel competition, but to provide an improvement platform for all. Previous efforts to identify composite measures of quality in pancreatic cancer care have not incorporated the IOM multidimensional definition of quality.⁵

We engaged a community of pancreatic surgery experts for help in determining which measures of quality they viewed as most important. Furthermore, we sought to align these preferred quality measures to the contemporary IOM domains, hoping to reveal a broader and multidimensional definition of surgical quality. We sought to identify the most actionable, relevant, and meaningful measures to include on a “quality scorecard” designed specifically for pancreatic surgery.

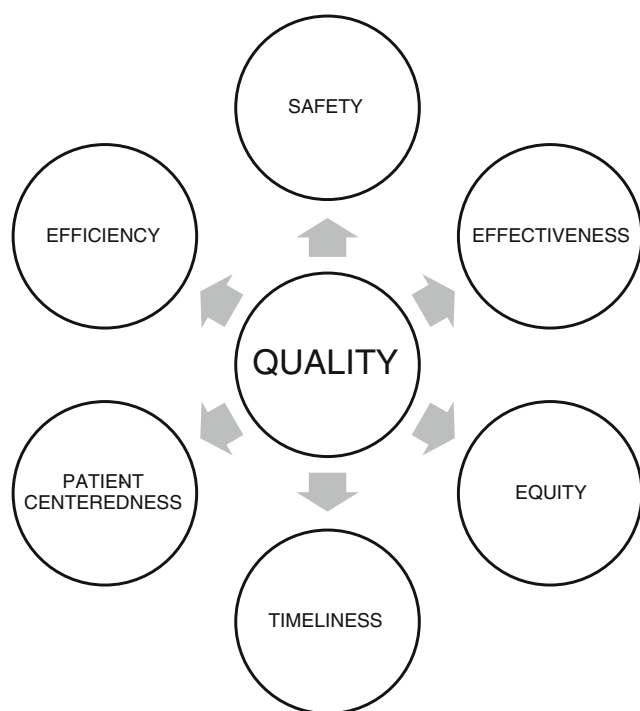


Fig. 1 Six domains of healthcare quality according to the Institute of Medicine (IOM)

Methods

Together with a professional market research firm, we created and distributed a web-based survey to specialty pancreatic surgeons (Fig. 2). This firm provided survey design

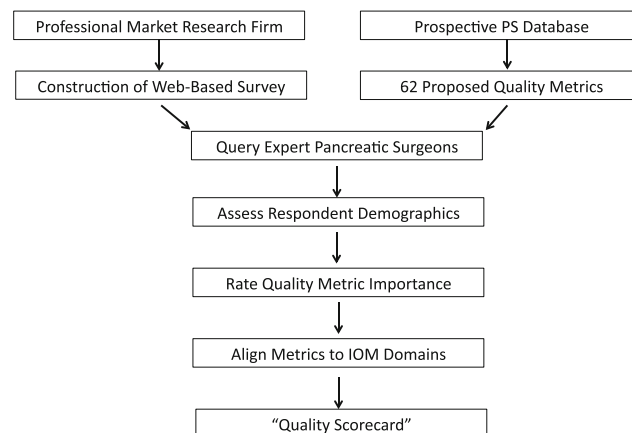


Fig. 2 Flow diagram of methods for scorecard development (PS: pancreatic surgery; IOM: Institute of Medicine)

expertise, data acquisition and electronic platform experience, and statistical advice. The 20-min survey indicated, upon opening,¹ the expressed global objective of determining what experts considered the best quality indicators in pancreatic surgery and² the particular objective of how these indicators may align to contemporary IOM domains. Readily accessible definitions of the IOM domains were provided. This electronic survey was open for response for 1 month, with serial reminders sent to potential respondents. This survey was approved by the Institutional Review Board of the Beth Israel Deaconess Medical Center.

Experts in pancreatic surgery were identified through pancreatic and gastrointestinal surgery specialty societies. Multiple demographic questions were built to reveal respondent specialty practice and experience from training, years in practice, and case volume. Using a large, prospectively acquired patient database, the authors compiled 62 proposed pancreatic surgery quality metrics. Respondents ranked these proposed quality metrics on levels of importance from “essential” to “not important.” Next, respondents were asked to align each metric to one or more IOM quality domains. Descriptive statistics were used to summarize responses.

The proposed optimal metrics for a potential quality scorecard were selected as those that were deemed both highly essential and reflective of multiple IOM domains. A quadrant analysis of importance and domain alignment was performed to identify potential scorecard items. To calculate and rank relative quality scores, points were awarded for level of importance (4, Essential; 3, Very important; 2, Somewhat important; 1, A Little important; 0, Not important) and multi-domain alignment (one point per each aligned domain). Scores for level of importance and multi-domain alignment for a given quality metric were averaged together to render a total quality score (TQS) ($TQS = [LoI + MDA/2] \times 100$).

Results

One hundred six pancreatic surgery experts (21 %) completed the survey. Eighty-two percent were located in North America. The mean number of pancreatic operations performed by the respondents annually was 43.1, and the mean number of pancreatic operations performed at the respondents' institutions was 114.5. Seventy-eight percent of respondents had at least 6 years of post-residency surgical experience. Over half (56 %) of respondents had formal fellowship training, with the majority of those having trained in hepatobiliary and pancreatic surgery (51 %) or surgical oncology (25 %). Over three-quarters of respondents perform minimally invasive pancreatic operations, but the majority stated that less than a quarter of all of their pancreatic operations were minimally invasive.

There was clear consensus among respondents on the need for deeper evaluation of quality measures for pancreatic surgery: Ninety percent of respondents felt that there “definitely” or “probably” is a need for improved quality measures for pancreatic surgery, and 81 % of respondents felt that they “definitely” or “probably” would find a quality scorecard for pancreatic surgery useful.

Respondents ranked the potential quality metrics on a scale from “essential” to “not important” (Table 1). Quality measures related to mortality, to the rate and severity of complications, and access to multidisciplinary services were viewed as being the most essential to a pancreatic surgery quality scorecard. Over half of respondents viewed these metrics as “essential.” The severity of complications and the 30-day readmission rate were viewed as “essential” or “very important” by 87 % and 84 % of respondents, respectively. Multidisciplinary services for pancreatic diseases were viewed as “essential” or “very important” by 84 % of respondents.

In contrast, many potential indicators were viewed as less important indicators of quality in pancreatic surgery. Five percent or less of respondents indicated that patient demographic characteristics, such as socioeconomic status, race, ethnicity, or health insurance status, were essential measures of quality. Sixty-four percent of respondents viewed initial direct medical costs as “somewhat important” or “a little important.” The costs of complications or readmissions were viewed as “essential” by 14 % and 10 % of respondents, respectively. Patient-reported satisfaction with care was rated “essential” by 22 % of respondents; 38 % thought patient satisfaction with care was “somewhat” or “a little” important as a quality measure. Similarly, family reported satisfaction with care was rated “essential” by 16 % of respondents, with 47 % rating it as “somewhat” or “a little” important.

Respondents were next asked to align each quality measure with one or more IOM domains of healthcare quality. Table 2 displays the top six quality measures in each domain. These quality measures are the most representative of each respective domain. Consensus among respondents on domain alignment varied dramatically by domain, with safety having the highest agreement among respondents. Among the 13 quality measures rated as essential by at least one-quarter of respondents, ten most strongly aligned with the IOM domain of safety.

Top-quality metrics for a potential pancreatic surgery quality scorecard were determined by the total quality score. Those metrics related to mortality, to the rate and severity of complications, and to access to multidisciplinary services for pancreatic disease had the highest TQS. Technical and peri-operative metrics had intermediate TQS. Metrics related to patient satisfaction with care, costs of care, and patient demographics had the lowest TQS. The least represented

Table 1 Respondents ranked the potential quality metrics on a scale from “essential” to “not important”

	Essential (%)	Very important (%)	Somewhat important (%)	A little important (%)	Not Important (%)
In-hospital mortality	68	26	6	0	0
30-day mortality	60	31	7	1	1
90-day mortality	57	29	11	1	2
Major complication rate	55	42	3	0	0
Multidisciplinary services for pancreatic diseases	47	37	15	0	1
Overall complication rate	44	47	9	0	0
Severity of complications	43	44	11	2	0
Incidence of postoperative hemorrhage	36	51	11	2	0
VTE prophylaxis	35	40	21	3	1
Survival rates 1 year post-op	34	44	17	4	1
Incidence of postoperative pancreatic fistula	33	46	17	3	1
30-day readmission rate	31	53	12	3	1
Survival rates 5 years post-op	30	36	23	7	4
Timely and appropriate perioperative antibiotics	28	38	26	6	2
Patients with malignancy who undergo adjuvant therapy	27	46	21	3	3
Vaccination for distal pancreatectomy	27	35	26	9	3
Timing of re-operation	24	35	31	9	1
90-day readmission rate	22	48	21	6	3
Patient-reported satisfaction with care	22	40	32	4	2
Intraoperative estimated blood loss (EBL)	21	36	36	5	2
Intraoperative blood transfusion rate	20	54	22	3	1
Timing from diagnosis to surgical consultation	20	44	29	6	1
Use of postoperative percutaneous drainage	20	31	34	13	2
Time from operation until adjuvant therapy	19	42	31	6	2
Use of risk adjustment models	19	33	36	6	6
Incidence of abscess	18	55	21	5	1
Total readmission days	18	39	34	7	2
Discharge disposition from hospital	17	40	31	9	3
Incidence of wound infection	17	37	35	10	1
CT angiogram pre-operatively	17	22	29	15	17
Total costs of care	16	44	26	9	5
Timing from surgical consultation to operation	16	39	36	6	3
Formal discharge planning processes	16	37	32	8	7
Family reported satisfaction with care	16	33	37	10	4
Postoperative blood transfusion rate	15	48	32	3	2
Surgeon obtained informed consent	15	32	23	14	16
Costs of complications	14	43	29	10	4
Patient opinions about pain control	12	37	35	10	6
Total hospital duration of stay	11	41	38	8	2
Rate of long term complications	11	32	44	9	4
ICU utilization	11	30	40	12	7
ICU duration of stay	11	26	38	21	4
Surgeon's operative time	11	21	46	16	6
Costs of readmissions	10	43	33	10	4
Initial hospital duration of stay	9	30	43	16	2
Incidence of delayed gastric emptying	8	31	43	16	2

Table 1 (continued)

	Essential (%)	Very important (%)	Somewhat important (%)	A little important (%)	Not Important (%)
Other techniques for pain control	8	27	44	12	9
BMI distribution of patient population	7	33	32	16	12
Initial direct medical costs	7	23	48	16	6
Total intraoperative fluids	7	19	47	20	7
Use of staging laparoscopy for malignancy	7	17	33	24	19
Timing of drain removal	7	15	33	29	16
Involvement of palliative/pastoral care	6	22	45	22	5
Preoperative endobiliary stenting	6	19	34	29	12
Type of pancreatic anastomoses used	6	11	34	24	25
Use of drains	6	10	32	29	23
Age distribution of patient population	5	31	31	18	15
Socioeconomic distribution of patient population	4	16	30	25	25
Gender distribution of patient population	4	6	23	25	42
Health insurance status of patient population	3	7	22	27	41
Ethnic distribution of patient population	3	5	29	27	36
Race distribution of patient population	1	7	30	23	39

IOM domains were equitability, efficiency, and patient-centeredness. Quality metrics that were sporadically aligned to these domains were thought to be of low importance. Twelve proposed scorecard metrics emerged with the highest TQS (Table 3).

Nearly all respondents (99 %) indicated that at least some quality measures should be stratified by risk assessment models. Forty-two percent of respondents thought National

Surgical Quality Improvement Program (NSQIP) was the most useful preoperative risk assessment model, but 23 % of respondents indicated that “none” of the risk assessment models were useful. Less than 15 % of respondents indicated that any of the other tools, including POSSUM, the American Society for Anesthesiology, the case mix index, SCORE, or the Surgical Apgar, should be used to risk-stratify quality metrics.

Table 2 Quality measures in each domain

Safety (Range, 84–89 %)	Timeliness (Range, 31–84 %)	Effectiveness (Range, 61–78 %)
• Incidence of postoperative hemorrhage • Major complication rate • Intraoperative blood transfusion rate • Mortality • VTE prophylaxis • Severity of complications	• Timing from diagnosis to surgical consultation • Timing from surgical consultation to operation • Time from operation until adjuvant therapy • Timing of re-operation • Timing of drain removal • Formal discharge planning processes	• Survival rates • Patients with malignancy who undergo adjuvant therapy • Multidisciplinary services for pancreatic diseases • Type of pancreatic anastomoses used • Use of drains • Use of staging laparoscopy for malignancy
Patient-centered (Range, 66–89 %)	Efficiency (Range, 53–75 %)	Equitability (Range, 67–86 %)
• Patient opinions about pain control • Family-reported satisfaction with care • Patient-reported satisfaction with care • Involvement of palliative/pastoral care • Other techniques for pain control • Attending surgeon obtains informed consent	• Total costs of care • Initial direct medical costs • Costs of complications • Costs of readmissions • Total hospital duration of stay • Initial hospital duration of stay	• Socioeconomic distribution • Health insurance status • Ethnic distribution • Race distribution • Gender distribution • Age distribution

Table 3 Proposed scorecard metrics emerged with the highest TQS

Quality measure	Total score
Multidisciplinary services for pancreatic diseases	63
Major complication rate	60
Mortality (in-hospital, 30 days, 90 days)	59
Overall complication rate	57
Severity of complications	56
Incidence of postoperative hemorrhage	55
VTE prophylaxis	54
Patients with malignancy who undergo adjuvant therapy	54
Readmission rates (30 days, 90 days, total)	54
Incidence of postoperative pancreatic fistula	54
Timely and appropriate perioperative antibiotics	53
Time from operation until adjuvant therapy	52

Discussion

The IOM report “To Err is Human: Building a Safer Health System” drew attention to the gaps in patient safety in the US healthcare system.⁶ The IOM went further in “Crossing the Quality Chasm” to expand the definition of quality beyond patient safety. The IOM issued a call to action to address shortcomings across six domains of healthcare quality: safety, effectiveness, timeliness, efficiency, patient-centeredness, and equity. This survey is the first, to our knowledge, that attempts to align quality metrics in pancreatic surgery with the IOM-designated definition of healthcare quality.

The results of our survey indicate that there is agreement on the need for improved quality metrics in pancreatic surgery beyond what currently exists in the literature and in practice. In selecting metrics for quality, respondents rated metrics related to mortality and complications among the most essential. In fact, the majority of the most “essential” metrics of quality were aligned to the IOM domain of safety. This is consistent with the current status of quality measurement in pancreatic surgery, which is largely outcome-based. Furthermore, this focus on safety reflects current reimbursement practices, which penalize hospitals for “never events”—patient safety failures—but do not provide financial incentive (or disincentive) for other aspects of quality.

Metrics related to timeliness—including timing of reoperation, time from diagnosis to surgical consultation, and time from surgical consultation to operation—were mostly rated as “very important” rather than “essential”. When both the level of importance and multi-domain alignment of all metrics were analyzed, multidisciplinary services for pancreatic diseases emerged as the top-quality metric.

Perhaps surprisingly, some metrics failed to achieve significant consensus as to their importance as quality metrics. In particular, elements of cost of care, length of stay, and ICU utilization were not rated as highly essential metrics of

quality. The relatively low importance of cost as a quality metrics in this survey is notably incongruent with the current pressure from healthcare purchasers and policymakers who are increasingly focused on resource utilization. The healthcare landscape is undergoing historic realignment towards parsimonious care. The cost of healthcare delivery is paramount in the current political and economic climate, and measures related to cost are likely to be unavoidable as key benchmarks for quality.

Respondents rated patient demographics, such as age, body mass index, race, socioeconomic status, and gender, as unimportant metrics of quality, but they aligned these metrics with the IOM domain of equity. The IOM emphasized equity as a domain of quality because of the clear evidence of disparities in medical care, including surgical care. Race, for instance, is a predictor of poor outcome following surgery.^{7–9} Minority patients have been shown to be less likely to use high-volume hospitals and surgeons for procedures with established volume–outcome relationships.¹⁰ Similarly, patient socioeconomic status has been shown to be an independent predictor of operative mortality, as well as a source of disparity in specific surgical treatments, including kidney transplantation and resection of hepatocellular carcinoma.^{11–13}

Less than one-quarter of respondents felt that patient or family satisfaction with care was an important metric of quality. In the last decade, there has been a movement to acknowledge, measure, and value the patient perspective on healthcare. Recently, the US Congress established The Patient-Centered Outcomes Research Institute to fund research that engages and informs patients and families. This initiative underscores the growing importance of strategies for involving patients directly in all aspects of care. The Center for Medicare and Medicaid Services, along with the Agency for Healthcare Research and Quality, created the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey. HCAHPS is the first national, standardized, publicly reported survey of patients’

perspectives of hospital care. The survey focuses on several aspects of the patient experience, including communication, responsiveness, and pain management. While the respondents for our survey did not find patient or family satisfaction to be an essential metric of quality, this perspective may be an important metric of quality in the future. Some studies have found an association between patient perception of care and technical metrics of quality, indicating that patient satisfaction may have a role as an adjunct metric of health-care quality.¹⁴ Hospitals that perform well on the HCAHPS survey in measures of patient satisfaction generally provide higher clinical quality of care, and positive patient experiences are associated with high nurse-staffing levels.¹⁵

Despite the unexpected findings described above, respondents did yield sufficient consensus on several actionable items for quality scorecard development. These metrics may reveal quality to an extent that volume and mortality alone cannot. Historically, the focus of surgical quality improvement has been to expand upon crude analysis of mortality rates by using validated measurement of risk-adjusted outcomes, as in the case of the Veteran Administration's NSQIP.¹⁶ Outcome measures are readily captured and provide an important variable, but adverse outcomes are relatively rare events and therefore still provide a limited view surgical care. Process measures, such as antibiotic administration, have the advantage of being actionable items for change. Process improvements and the implementation of clinical pathways have been shown to mitigate high preoperative expected morbidity in high-acuity surgery¹⁷ and to be cost-effective.¹⁸

There are several limitations to this study. First, this study is a preliminary effort to identify potential quality scorecard items. A final scorecard will require several additional steps, including the development of accurate risk-adjustment methods and benchmarks for each metric. There will need to be prospective validation of scorecard metrics, which will require multi-institutional collaboration and support from major professional organizations. The survey focused on proposed metrics devised by the authors and derived from extensive institutional records. Therefore, respondents were only able to evaluate metrics proposed in the survey. Several respondents suggested additional metrics in the free-response portion of the survey, including participation in clinical trials, proper identification of extended care facilities, and access to advanced interventional radiology to control bleeding. Based on these comments, there are likely to be metrics that were not included in the survey that may be important metrics of quality in pancreatic surgery. These metrics need to be vetted for inclusion in a quality scorecard. Additionally, the response rate for this survey was only 21 %. While this is unsurprising given similar response rates for professional surveys in the literature, this study only represents the opinions of 106 pancreatic surgery experts

practicing primarily in academics and in North America. We believe a comprehensive survey of other healthcare stakeholders, including patients, family members, administrators, and insurance companies, should be surveyed to determine which metrics of quality matter most to them.

In summary, we conducted a survey of experts in pancreatic surgery to identify potential metrics of quality that went beyond traditional measures of volume and outcome and aligned with the six IOM domains of healthcare quality. While many of the most highly ranked scorecard items related to safety, we identified multidisciplinary services for pancreatic disease as the most essential and most representative metric of quality. Much work remains in developing acceptable metrics related to patient-centeredness and equity.

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Discussant

Dr. Brett C. Sheppard (Portland, OR): Congratulations to the Harvard group for another fine study that is both timely and thought provoking. I would agree that this is the first study that attempts to align IOM quality domains with real-world metrics.

Your survey has exposed some of the unease in which we practice. That is, over 90 % of pancreatic surgeons felt there is a need for improved quality metrics and 99 % felt that risk adjustment models need to be incorporated into these metrics. Sadly, less than half of respondents thought NSQIP was the most useful tool, and 20 % believed there was not a useful model that existed. I would be interested in your thoughts on this. In particular, based on your study, what can you recommend to improve NSQIP?

Next, the majority of responders agreed that metrics related to morbidity and mortality and access to multi-disciplinary care were essential. We do not have a clear consensus on how best to standardize measurement of complications and access to care. How would you propose to do this?

We also learned from your study that there is a substantial disconnect between the equally weighted IOM domains and where pancreatic surgeons put their money. That is, only 20 % of us responded that patient and family satisfaction were essential metrics. I find this very disturbing and wonder when we will have the will to move beyond so-called “conventional” metrics? This year, at the Pancreas Club, we learned that depression in pancreatic cancer patients is associated with a reduced chance of recovery, less chance of receiving appropriate care, and may contribute to reduced survival. We also learned that fear of recurrence is pervasive and greatly reduces QOL in survivors. How would you propose we address this pancreatic “quality chasm”? How

would you alter your survey for patients and their families and bring us together?

Finally, based on the responses to your original 62 metrics and a calculated total quality score you presented us with 12 ranked “essential” metrics. I noticed that neo-adjuvant therapy was not part of the original 62 metrics. As your group knows many institutions are using neo-adjuvant therapy for pancreatic cancer, especially borderline resectable cancer. Could you tell us why this was omitted and elaborate on how you chose your original 62 metrics?

Thank you for a superb presentation

Closing Discussant

Brian T. Kalish: Thank you for your thoughtful discussion. We agree that this study brought to light what was already implicitly understood in the surgical community: It is critically important to measure quality, but current quality metrics are highly imperfect. Numerous authors have attempted to construct frameworks of risk-adjusted outcomes to best reflect surgical performance, and NSQIP is a useful tool for examining process measures, clinical variables, and outcomes. The integration of other metrics, such as those related to patient-centeredness, into NSQIP may prove logistically burdensome. Nevertheless, an ideal tool would have the multidimensionality to link the traditional outcome metrics to more sophisticated metrics of the patient experience and mental wellbeing.

The measurement of complex variables like complications and access to care is a science in and of itself, and there are no simple answers to the question of how to best define novel metrics. The goal of this study was to identify which metrics beyond the traditional metrics of mortality and volume might best reflect the entire spectrum of surgical care. The next steps will involve the definition of the benchmarks themselves. If the community is going to move forward with a broader assessment of quality in pancreatic surgery, the effort to define precise methods for metric measurement must be multi-institutional and create broad consensus.

The “quality chasm” in pancreatic surgery—the disconnect between the IOM domains and the focus of surgeons—certainly merits further exploration. Part of the reason for this disconnect is historical. For decades, mortality and morbidity from pancreatic surgery was incredibly high. It is not surprising that surgeons were most concerned about safety, because this domain is the most visible and arguably the most easily controlled. In recent years, certain centers have achieved remarkably low mortality and morbidity, and therefore, the time is now to focus on other ways of improving the quality of patient care. An additional reason for the focus on safety might be related to system pressures. The Center for Medicare and Medicaid Services has defined a set of “never” events for which hospitals will not be reimbursed; all of these events are safety related. Therefore, financial incentive at the institutional level is tied directly to safety.

The proposed quality metrics were selected from a very large, prospectively collected patient database. One of the most useful aspects of the survey was the “free response” answers from the expert respondents. Several additional metrics emerged from these responses, including neo-adjuvant chemotherapy, participation in clinical trials, and proper identification of extended care facilities. The metrics we proposed are not intended as the final, immutable answer to the question of how best to measure quality in pancreatic surgery. Our metrics are a springboard for thoughtful discussion and an impetus for deeper evaluation of the true breadth of surgical quality.