Oncologic Quality Indicators in Thoracic Surgery

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KEYWORDS

• Quality • Lung cancer • Esophageal cancer • Staging • R0 resection • Lymphadenectomy • Multidisciplinary treatment

KEY POINTS

- Quality of care can be evaluated through structure, process, and outcome measures.
- Adherence to evidence-based quality metrics improves patient survival outcomes.
- Strongly supported quality measures for lung cancer include preoperative mediastinal staging, timely anatomic resection via a minimally invasive approach, complete (R0) resection, adequate lymph node sampling, multidisciplinary care teams, and clinical care pathways.
- Strongly supported quality measures for esophageal cancer include staging with PET-computed tomography and endoscopic ultrasound, achieving an R0 resection, performing an adequate lymphadenectomy, and administering induction chemoradiation for locally advanced disease.

INTRODUCTION

Quality in surgical care is notoriously difficult to define, but a thorough discussion of quality indicators rests on an understanding of this concept, as well as an organized structure in which to consider multiple aspects of the care provided. Oncologic quality is essentially an assessment of the value of the various aspects of medical care provided to a patient from their first contact with a physician through completion of their care, with a goal of treatment or cure of disease, prolongation of survival, palliation of suffering, improvement in quality of life, or achievement of other aims important to the patient or society.

Donabedian[1] outlined a central framework in which the quality of medical care could be analyzed, focusing specifically on the patient-provider interaction. This model divides the assessment of quality into 3 categories: structure, process, and outcome measures (Fig. 1). These classifications of quality indicators build on each other and can be fragmented further to allow for a detailed analysis of the entire course of patient care.

Structure measures are defined as the characteristics of the environment and the medical providers that account for the overall setting in which care is provided. These metrics focus on the most physical aspects of care: hospitals, operating suites, instruments, and technology, as well as the experience-related aspects of care: training of surgeons and staff, availability of multiple medical specialties, volume, and centralization of care. The philosophy behind assessing these measures is that optimization of the setting will facilitate the provision of ideal medical care. Certain structure measures will be discussed later within this volume, so an in-depth discussion will be deferred here.

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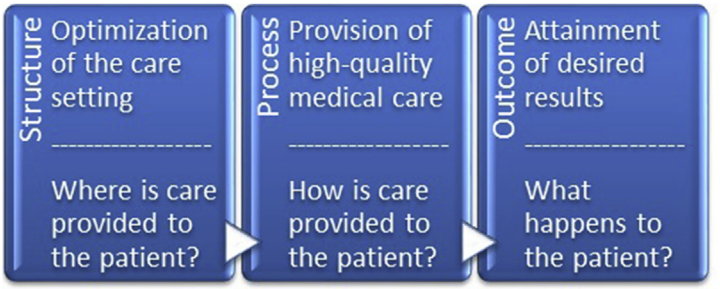

Fig. 1. A model for understanding quality of care in medicine as proposed by Donabedian. The 3 categories outlined provide a framework for discussion. (*Data from* Donabedian A. Evaluating the quality of medical care. Milbank Mem Fund Q 1966;33(4):691–729.)

Process measures are defined as evaluations of how care is provided to the patient in the setting previously described. These measures look at diagnostics, patient selection for appropriate care, and the treatments or interventions provided. Assessing these measures allows one to determine if high-quality care has been provided to the patient. This is based on the idea that patients receiving complete application of evidence-based medicine will have better outcomes. Process measures are of particular interest because these identify specific points in the patient's treatment in which practice could potentially be changed to enhance the patient's eventual outcome.

Outcome measures are defined as metrics, tracking the results of the entire medical process that the patient experiences. Outcomes are typically the most easily comprehensible of the 3 types of measures because they often track the discrete events that are easily identifiable and able to be precisely quantified. This category includes measures such as survival, cancer recurrence, and treatment-related complications. These outcome measures are susceptible to effects of factors other than simply the care provided. In the Donabedian framework, variables are often closely linked. Examples of these measures can be seen in (**Fig. 2**). A subset of outcomes measures is now of national interest and tracked by multiple entities. Organizations, such as the American College of Chest Physicians (ACCP), the British Thoracic Society (BTS), the European Society of Thoracic Surgeons (ESTS), the American College of Surgeons (ACS), the National Comprehensive Cancer Network (NCCN), and the Society of Thoracic Surgeons (STS), have proposed, and intermittently updated, treatment guidelines aimed at improving the quality, effectiveness, and efficiency of cancer care worldwide. These guidelines often represent a combination of best available evidence and expert opinion.

With a special focus on process and outcome measures, this framework is used to evaluate quality indicators currently relevant in thoracic surgical oncology in the preoperative, intraoperative, and postoperative phases. Current quality measures for lung and esophageal cancer are explored, and the relevant evidence and guidelines supporting use of these quality measures is discussed.

ONCOLOGIC QUALITY INDICATORS IN SURGICALLY RESECTABLE NON-SMALL CELL LUNG CANCER

Innumerable quality process indicators for non-small cell lung cancer (NSCLC) have been reported in the literature. Recently, a multidisciplinary expert panel used a modified Delphi process and concluded that, although mortality, morbidity, survival, and length of stay were the most important outcomes indicators, they were insufficient metrics of quality oncologic care delivery. Instead, they recommended 12 evidence-based and 5 consensus-based processes and outcome measures related to preoperative assessment, pathologic staging and evaluation, surgical resection, and adjuvant therapy.[2] Subsequently, Numan and colleagues[3,4] used the Donabedian framework for 2 systematic reviews to identify supported indicators for quality preoperative and postoperative care for stage I-IIIA NSCLC. Both strategies identified factors such as hospital size or teaching status, surgeon specialty, and access to multidisciplinary care teams as significant contributors to favorable oncologic outcomes.[3] Surgeon or hospital procedural volume was not clearly related to postoperative mortality (see Benjamin D. Kozower and George J. Stukenborg's article, "Volume Outcome Relationships in Thoracic Surgery," in this issue for further discussion). Because this article focuses on measures that lend themselves to easier targeted intervention, these structural measures are not addressed further. Instead, the actionable process measures that are strongly linked to patient outcomes have been coalesced into 9 divisions, addressing each evidence-based element in turn, as well touching on important issues of clinical equipoise. The

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