Using this approach, supportive care therapies are offered while the disease is treated with conventional therapies, such as surgery, chemotherapy, and radiation. Nutritional, psychological, behavioral, and social services support, as well as rehabilitation therapy, are available to enrich a patient's overall well-being and quality of life. This study supports the idea that nutritional support is an important component of this process. Additionally, performing preoperative nutrition assessments should improve patient selection for lung resection.

Providing integrative cancer care with individualized nutritional support and monitoring of nutritional status throughout a patient's journey can influence complication rates, mortality, and survival. Just some food for thought.

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Commentary: Using nutritional scoring systems to predict outcomes after lung cancer surgery: Food for thought

Monisha Sudarshan, MD, MPH, and
Sudish C. Murthy, MD, PhD

"It is much more important to know what sort of a patient has a disease than what sort of disease a patient has."

—William Osler

Monisha Sudarshan, MD, MPH (left) and Sudish C. Murthy, MD, PhD (right)

CENTRAL MESSAGE

Nutritional status can prognosticate postoperative outcomes and overall survival.

From the Department of Thoracic and Cardiovascular Surgery, Heart and Vascular Institute, Cleveland Clinic, Cleveland, Ohio.

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Address for reprints: Monisha Sudarshan, MD, MPH, Heart and Vascular Institute, Cleveland Clinic, 9500 Euclid Ave J4-1, Cleveland, OH 44195 (E-mail: sudarsm2@ccf.org).

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Our patients have become increasingly complex over time with advancing age, additional comorbid illnesses, and compromised functional status. Consequently, greater emphasis is now placed on selection criteria to rectify issues

that can unfavorably impact outcomes. This preoperative detective work is as important as the intervention itself. To this end, nutrition (and now immunonutrition) status has emerged as a critical determinant of postsurgical and oncologic outcome.¹ Yet, the best method to quantify nutritional deficiency, risk stratify, and identify actionable targets still remains nebulous and serves as an area of active investigation.

Takahashi and colleagues² investigate 3 different nutritional scoring systems for patients undergoing lung resection for non-small cell lung cancer. The group retrospectively reviewed 475 patients and assessed 3 different scores—Prognostic Nutritional Index (PNI), Controlling Nutritional Status score (CONUT), and Geriatric Nutritional Risk Index (GNRI). All scoring systems used albumin, with PNI adding total lymphocyte count, GNRI adding measured and ideal body weight, and the CONUT adding total cholesterol and total peripheral lymphocyte count. Interestingly, all systems proved to be independent predictors for postoperative complications and overall survival. Using the receiver operating characteristic curve, the authors identified optimal cut-offs within each scoring system and evaluated each model for overall survival across and within all pathologic stages. PNI proved to be the most accurate across the stages, followed by GNRI. The CONUT score discriminated survival only within stage III disease.

The validation of these nutritional scoring systems should be welcomed, and these data add meaningfully to the existing literature of non-small cell lung cancer outcomes prediction. However, this is certainly not the end of the story, nor even the beginning of the end, and we doubt it is even the end of the beginning. The PNI scores were predictive within each lung cancer stage, yet notably the GNRI and CONUT were not. Unfortunately, this limits the applicability of these assessment tools in early-stage cancer, where they might be most important.³ The authors were rightly reserved in declaring a winner among the scoring systems until further work is completed in a prospective manner. Meaningful comparative statistical analysis is

also limited, as all 3 scores use albumin, introducing multicollinearity. In addition, there was a lack of dynamic measurement of scores (preoperative vs postoperative), which could have provided useful insight and strengthened prediction. Finally, the group did not include comorbidities in the analysis, questioning if the scores would still be independent predictors of outcomes if this important confounder was integrated.

Preoperative nutritional assessments provide a start toward the identification of inflection points that might be modifiable but when in the preoperative process should these scores be calculated? And even if additionally validated, how is this information implemented in real time? Protein loading, immunonutrition, and exercise rehabilitation programs are a few pre-habilitation strategies with varied success in enhancing outcomes in thoracic surgery, but how might time to treat be impacted? Whether these approaches actually modify nutritional scores, and if repeat improved scores are correlated with better postoperative outcomes, remains to be clarified. Ideally, these nutritional parameters need to be complemented with frailty indicators, comorbidity indices, and functional status to provide an overall picture of risk and maximize prognostic power. The predictive capacity of these nutritional assessments for other treatment modalities, such as radiation and chemotherapy, would be particularly interesting, as it might change treatment algorithms. The clinical appetite to develop nutritional prognosticators is ample, and currently the plate is full of ideas to pursue, thus providing plenty of food for thought.

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