

# Are predictive models useful in clinical medicine?

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*Comment on:* Semenkovich TR, Panni RZ, Hudson JL, *et al.* Comparative effectiveness of upfront esophagectomy versus induction chemoradiation in clinical stage T2N0 esophageal cancer: A decision analysis. *J Thorac Cardiovasc Surg* 2018;155:2221-30.e1.

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The authors have submitted a very interesting paper that is a predictive model—meaning there are no new patients in this study. Rather the authors have search the literature to find all of the best articles that show the accuracy of EUS and then they used the National Cancer Database to show estimates of survival of subgroups of patients. Armed with these heterogonous data sets and many assumptions they construct a predictive model for patients with clinical T2N0M0 esophageal cancer.

The authors are world-class surgeons and researchers and we are honored to write an editorial on their work. There conclusions are expected one. Some of the most important factors that affect EUS accuracy are: experience of the endo-sonographer, the presence of absence of a complete exam because of stricture or patient's compliance and/or their ability to cooperate for the test. Interestingly these factors are not specified in the model. In addition, most of us now use PET scan to more reliably assess regionally lymph nodes since EUS is known to be inaccurate and often cannot biopsy the node because it is juxta-tumoral.

Pathologic factors that lead to understaging are nicely described by the authors in the limitation part of the discussion: tumor grade, presence of the vascular invasion the size of the tumor, large tumor size, maxSUV of >2.5, weight loss, dysphagia suggesting a T3 not T2 lesions etc. but are also not a major part of the predictive model.

Importantly, we are not told in this study if these data or model separate squamous cell cancer from adenocarcinoma nor if the lesion is in the upper, mid or distal esophagus. These are the other major factors that lead to management decisions and are data points that we as practice surgeons have to know in order to a make a fully informed assessment of the optimal treatment choices for these patients.

In the article the author states in the discussion that there may be surgeon bias in selecting low-risk patients for upfront surgery and the high-risk patients for induction therapy. Perhaps they mean low risks for under staging because most of us practice the opposite way. When we see a young healthy (low-risk for surgery) patient with the clinical T2 lesion adenocarcinoma of the distal esophageal cancer we favor neo-adjuvant therapy. If the patient is elderly with high-risk (for surgery) with other multiple comorbidities then we usually favor going directly the operating room.

This is an interesting article and we congratulate the authors on trying to bring some science via a predictive model to some remaining unanswered clinical questions.

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## Footnote

*Conflicts of Interest:* Cerfolio Consulting 2018: Medtronic, Google/Johnson & Johnson, Intuitive Surgical,

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