Preoperative induction therapy in stages II and III adenocarcinoma of the esophagogastric junction (AEG) and gastric cancer is now an accepted treatment choice in the Western world. Patients who respond to induction therapy have significantly improved survival compared to nonresponding patients. Until recently, however, no prospectively tested markers for predicting response and/or prognosis in this setting were available. The MUNICON I study recently showed the utility of fluorodeoxyglucose-positron emission tomography (FDG-PET) in predicting response and prognosis in AEG and indicated the feasibility of a PET-guided treatment algorithm. These findings are an important step forward in tailoring multimodal treatment to tumor biology. In gastric cancer, the issue is more complicated, because approximately 30% of these cancers cannot be visualized with sufficient contrast for quantification. Insufficient FDG uptake is mostly associated with diffusetype gastric cancer with signet cells and mucinous content. In FDG avid patients, FDG-PET can be used for response evaluation. The prognosis of nonavid patients is similar to metabolic nonresponders. The addition of new tracers (eg, fluorothymidine) might increase the accuracy of these tests in the future. In AEG types I and II, PET-guided induction therapy is feasible and will undergo further evaluation in a randomized multicenter trial. In gastric cancer, there should be
consideration of such treatment concepts as immediate resection after 2 weeks of induction therapy with or without adjuvant treatment in metabolic nonresponders or modified chemotherapy regimens possibly including biologically targeted drugs in FDG non-avid tumors.