

The Varying Costs of Endoscopic Surveillance May Affect the Follow-Up Endpoint Identified by Cost-Benefit Analysis in Barrett's Esophagus Patients Around the World



Dear Editors:

We read the study written by Omidvari et al¹ with great interest. Because there is no recommendation for the age at which to discontinue surveillance for patients with nondysplastic Barrett's esophagus (NDBE), the authors used 3 independently developed models for simulation, varying in age, sex, and comorbidity level. They determined the optimal age at which to end surveillance as the age at which the incremental cost-effectiveness ratio of 1 more surveillance was just below the willingness-to-pay threshold of \$100,000/quality-adjusted life year. As an innovative study, the comparative cost-effectiveness analysis provides clinicians with more practical implications. However, we still have some questions about universality.

In this study, the cost for 1 more endoscopic surveillance was calculated from the price of gastroscopy in the United States, approximately ranging from US\$1250 to US\$5000. However, the price of gastroscopy varies greatly in different countries. For example, the cost for 1 endoscopic surveillance is only US\$30–US\$100 in China. This is far less than one tenth of the cost in developed countries, and it might be similar in other developing countries. Because the endoscopy cost fluctuates sharply among different countries, the endpoints of endoscopic surveillance estimated from the cost-benefit analysis should inevitably be modified. It is valuable that this study identified the optimal age at which to stop endoscopic follow-up of patients with NDBE based on sex and comorbidities. However, it is challenging to accept that the optimal values assessed from the cost-benefit analysis are suitable for clinical practitioners around the world without considering the variable cost of endoscopic surveillance.^{2–4} Ignoring this may make a less convincing conclusion and limit universality.

The analysis would be more accurate and universal if the variable cost were taken into consideration, given its wide variation and great importance. Fully or partially quantifying the regional differences in the cost of endoscopic surveillance would be the solution. Specifically, the endoscopy cost in different countries and districts could be collected and quantified for further analysis. For example, the average expense of endoscopy in the United States is US\$2750, nearly 100 times more than that in China. The simulation models could then be applied to process the data and estimate the optimal age in these populations with some appropriate adjustment. What's more, the cost of endoscopic surveillance could be converted and stratified into different levels, such as <US\$100, US\$100–US\$1000, and >US\$1000 for low, medium, and high costs,

respectively, which depends largely on the condition of each place. By introducing the variable (the level of endoscopy cost) into the subgroup analysis, the estimated follow-up endpoint identified from the cost-benefit analysis could be more flexible and accessible for clinicians worldwide.

In summary, we appreciate the work by Omidvari et al,¹ which offers practical implications for the surveillance of patients with NDBE. Given the advantages of the modeling and current results, we believe that the study would be more well grounded if the cost of endoscopy were taken into the subgroup analysis, thus having a profound and far-reaching impact on subsequent clinical practice.

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Conflicts of interest

The authors disclose no conflicts.

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Reply. We read with great interest the letter to the editor from Wu et al regarding our paper on the optimal age to stop endoscopic surveillance of patients with Barrett's esophagus (BE).¹

As we reported in our paper and the authors mentioned in the letter, in our analysis, the costs of surveillance were calculated based on the price of upper gastrointestinal endoscopy in the United States, which is the amount that the Centers for Medicare and Medicaid Services reimburse the physician and the facility for performing the endoscopy. We agree with the authors that the costs of conducting one more endoscopy vary by country. The results of our study

are therefore not likely to be generalizable to other countries, particularly to countries where the cost of health care services are very different from the United States. In this study, our primary aim was to inform guidelines in the United States, and therefore, we performed the cost-effective analysis using the costs in the US setting.

Wu et al suggested a stratified analysis based on the level of endoscopy cost to make the results usable for clinicians worldwide, including China. However, we believe that varying only the endoscopy costs will not be sufficient to make the results generalizable. Not just costs of endoscopy, but all costs associated with the management of BE and esophageal adenocarcinoma (EAC) differ by country and will impact the cost-effectiveness of BE surveillance. Most importantly, in our study, we have determined the optimal age of last surveillance of patients with BE from a cost-effectiveness perspective using the commonly accepted willingness-to-pay threshold per quality-adjusted life-year gained in the United States. This threshold also varies substantially from country to country, depending on various factors, such as gross domestic product per capita of each country.²

In addition to different costs of health care interventions and willingness-to-pay thresholds, we must consider that the models in our study are developed based on the natural history of EAC in the United States. EAC is the dominant type of esophageal cancer in several Western countries, including the United States. However, in countries located in Southeastern and Central Asia, including China, squamous cell carcinoma is the dominant type, which indicates that the risk of developing BE and EAC is lower in China than in the United States.³ Therefore, the models also should be recalibrated to represent the natural history of the disease in countries with low BE and EAC incidence to make the results usable for informing BE management policies in those countries.

In conclusion, we agree with the authors that our results are not generalizable to other countries and settings. However, rather than performing stratified analyses based on endoscopy costs alone, future studies should evaluate the cost-effectiveness of surveillance of BE in Asia, including the appropriate age to stop surveillance, taking into account all of the factors discussed previously.

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Conflict of interest

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Correction



Jin B, Ha SE, Wei L, et al. Colonic Motility Is Improved by the Activation of 5-HT_{2B} Receptors on Interstitial Cells of Cajal in Diabetic Mice. *Gastroenterology* 2021;161:608–622.

In the above article, in the Discussion section, the following sentence should have included a citation for reference 21, not reference 56: “In our attempt to clarify the relationship between EC cell-derived 5-HT and GI motility using the inducible EC cell-depleted *Tph1-DTA* mice that we generated previously,²¹ we found that ND-fed male and female mice developed delayed total GI transit and colonic transit when EC cells were conditionally depleted.” Also, the redundant reference 23 in the reference section should have been deleted and subsequent references from 24 to 56 should have been renumbered 23 to 55 in the reference section. The online version of the article has been updated.