Communication from the ASGE Standards of Practice Committee

GUIDELINE

# Race and ethnicity considerations in GI endoscopy

**Prepared by: ASGE STANDARDS OF PRACTICE COMMITTEE**

**Amy Wang, MD, FASGE, Aasma Shaukat, MD, MPH, FASGE, Ruben D. Acosta, MD, David H. Bruining, MD, Vinay Chandrasekhara, MD, Krishnavel V. Chathadi, MD, Mohamad A. Eloubeidi, MD, MHS, FASGE, Robert D. Fanelli, MD, FACS, FASGE, Ashley L. Faulx, MD, FASGE, Lisa Fonkalsrud, BSN, RN, CGRN, SGNA Representative, Suryakanth R. Gurudu, MD, FASGE, Loralee R. Kelsey, RN, CGRN, SGNA Representative, Mouen A. Khashab, MD, Shivangi Kothari, MD, Jenifer R. Lightdale, MD, MPH, FASGE, V. Raman Muthusamy, MD, FASGE, Shabana Pasha, MD, John R. Saltzman, MD, FASGE, Julie Yang, MD, Brooks D. Cash, MD, FASGE, Previous Committee Chair, John M. DeWitt, MD, FASGE, Chair**

This document was reviewed and approved by the Governing Board of the American Society for Gastrointestinal Endoscopy.

*This is one of a series of statements discussing the use of GI endoscopy in common clinical situations. The Standards of Practice Committee of the American Society for Gastrointestinal Endoscopy (ASGE) prepared this text. In preparing this guideline, a search of the medical literature was performed by using PubMed. Additional references were obtained from the bibliographies of the identified articles and from recommendations of expert consultants. When little or no data existed from well-designed prospective trials, emphasis was placed on results from large series and reports from recognized experts. Guidelines for appropriate use of endoscopy were based on a critical review of the available data and expert consensus at the time the guidelines were drafted. Further controlled clinical studies may be needed to clarify aspects of this guideline. This guideline may be revised as necessary to account for changes in technology, new data, or other aspects of clinical practice. The recommendations were based on reviewed studies and were graded on the quality of the supporting evidence (Table 1)[1] The strength of individual recommendations is based on both the aggregate evidence quality and an assessment of the anticipated benefits and harms. Weaker recommendations are indicated by phrases such as "we suggest," whereas stronger recommendations are typically stated as "we recommend."*

*This guideline is intended to be an educational device to provide information that may assist endoscopists in providing care to patients. This guideline is not a rule and should not be construed as establishing a legal standard of care or as encouraging, advocating, requiring, or discouraging any particular treatment. Clinical decisions in any particular case involve a complex analysis of the patient's condition and available courses of action. Therefore, clinical considerations may lead an endoscopist to take a course of action that varies from these guidelines. For the purposes of this document, the terms African American, Hispanic, and Caucasian will be used for consistency.*

The United States comprises a racially and ethnically diverse population that continues to differentiate. Over a 10-year period, the U.S. census observed a 43% increase in both Hispanic and Asian populations, whereas the Caucasian and African American populations increased at a smaller rate (5%-9%). In addition, the number of respondents reporting 2 or more racial backgrounds continues to rise.[2] Observations of differences in the prevalence or presentations of disease among racial and ethnic groups are important keys to disease diagnosis and management. This guideline will emphasize important differences in GI disease patterns among minority racial and ethnic groups in the United States, which may influence the practice of endoscopy in these patient populations. This guideline is not intended to serve as a comprehensive list of GI disease profiles for various racial and ethnic groups. Studies addressing the impact of modifying specific endoscopic standards of practice for conditions based on race and ethnicity are currently lacking. At the same time, it is important to recognize that these populations are not homogeneous and that additional factors, such as environment and behavior, also play important roles in disease.[3]

## ESOPHAGUS

### Barrett's esophagus and adenocarcinoma

Barrett's esophagus (BE) is recognized as a precursor lesion for esophageal adenocarcinoma (EAC), and screening


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**TABLE 1. GRADE system for the quality of evidence for guidelines**

| Quality of evidence | Definition | Symbol |
|---|---|---|
| High quality | Further research is very unlikely to change our confidence in the estimate of effect. | ⊕⊕⊕⊕ |
| Moderate quality | Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate. | ⊕⊕⊕◯ |
| Low quality | Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate. | ⊕⊕◯◯ |
| Very low quality | Any estimate of effect is very uncertain. | ⊕◯◯◯ |

*GRADE*, Grading of Recommendations Assessment, Development and Evaluation.
Adapted from Guyatt et al.[1]

for BE is a well-established practice among endoscopists.[4-6] In the United States, there has been a 3-fold to 5-fold increase in the incidence of EAC over the past 3 decades.[7-9] Among racial and ethnic groups, the prevalence of EAC in Caucasian men is much higher (5.4/100,000) than in African Americans (1.4/100,000), Native Americans/Alaska Natives (3.0/100,000), and Asian Americans/Pacific Islanders (0.8/100,000).[10] Population studies have demonstrated a similar trend, with an observational study of a Kaiser membership population demonstrating highest annual incidences of BE in both sexes among non-Hispanic Caucasians (39/100,000), with lower rates among Hispanics (22/100,000), Asians (16/100,000), and African Americans (6/100,000).[11] Studies outside of the United States also suggest an overall low prevalence of BE in Asian patients, with ranges of 0.4% to 2.0%,[12-16] and a rise of EAC paralleling that of the United States has not been consistently observed.[17-21] Although it is postulated that acclimation to Western lifestyle and diet will translate into increased rates of GERD and its adverse events among immigrants in the United States, there are no available data to support this assertion. As such, Caucasian race is a risk factor for development of BE and EAC, and a cost-effectiveness analysis has supported the practice of endoscopic screening of Caucasian men aged >50 years who have GERD symptoms.[22] Recent guidelines also support screening patients with chronic GERD symptoms and multiple risk factors regardless of race or ethnicity, but note that the maximal yield will be in Caucasian men aged >50 years.[5,23,24]

## Esophageal squamous cell carcinoma

The incidence of esophageal squamous cell carcinoma (SCC) in the United States is very low and decreasing. Among men, it is the most frequent esophageal malignancy in African Americans, with an annual incidence of 9.3/100,000 compared with only 2.0/100,000 in Caucasians, 2.5/100,000 in Native Americans/Alaska Natives, and 3.0/100,000 in Asian Americans/Pacific Islanders.[25] A similar pattern is seen among women, although the incidence is much lower (range 0.5/100,000-2.8/100,000). Incidence rates among new immigrants from regions of the world such as Northern China, India, and Northern Iran (areas that encompass the "esophageal cancer belt") may be higher, because SCC is common in these areas, with an annual incidence rate of 100/100,000.[10] Screening for esophageal squamous dysplasia with chromoendoscopy by using Lugol's solution has been explored in these high-risk regions; however, widespread acceptance has been limited because of its invasiveness, low specificity, and high costs in low-resource communities.[26] There are no U.S. studies that investigate the use of endoscopic screening for SCC, and currently there are insufficient data to support race-specific or ethnicity-specific screening guidelines for this malignancy.

# STOMACH

## Gastric neoplasia and *Helicobacter pylori* infection

Gastric cancer is the 16th most common cause of cancer in the United States but remains one of the leading causes of cancer mortality worldwide.[27,28] The incidence of gastric cancer is high in Asia-Pacific regions including Japan, Korea, China, Taiwan, and Malaysia as well as South America, Central Europe, South Africa, and Russia.[29-31] The reported incidence of gastric cancer is much lower in the United States but is significantly higher among African Americans, Hispanics, and Native Americans compared with Caucasians.[4,32] Between 2007 and 2011, the incidence of gastric cancer in the United States per 100,000 men was 9.2 for Caucasians, compared with 15.3 for African Americans, 14.9 for Asians, 12.9 for Native Americans, and 14.8 for Hispanics. During the same period, the incidence of gastric cancer in the United States per 100,000 women was 4.5 for Caucasians, 8.5 for African Americans, 9.0 for Asians, 7.3 for Native Americans, and 8.3 for Hispanics.[32] The majority of gastric cancers are diagnosed late and are associated with a poor prognosis. Thus, screening and surveillance strategies for high-risk populations have been advocated.

In 1994, the World Health Organization classified *Helicobacter pylori* infection as a type I carcinogen in humans.[33] Systematic reviews of case-control studies suggest that 65% to 80% of non-cardia gastric adenocarcinomas can be attributed to this infection.[34,35] In Chinese, Korean,

Japanese, and Vietnamese populations, *H pylori* infection rates can be as high as 51% to 72%,[36-40] whereas the prevalence of infection in areas of South America, Russia, and Siberia is 41%, 64%, and 94%, respectively.[41-43] Population screening and treatment of the bacterium in high-risk areas is preferably performed before the development of precancerous gastric lesions. Several campaigns in Korea, Japan, and areas of China and Taiwan suggest that eradication in a high-risk population significantly reduces the incidence of gastric cancer.[44,45] Furthermore, a recent meta-analysis of 6 randomized controlled trials indicated that screening for and eradicating *H pylori* reduces the incidence of gastric cancer in healthy, asymptomatic, infected Asian individuals (relative risk 0.66; 95% confidence interval [CI], 0.46-0.95).[46] Cost-effectiveness models indicate that screening for and treating *H pylori* has the potential to reduce the risk for gastric cancer at a reasonable cost, and this benefit is even more evident for groups at high risk for the development of gastric cancer.[47-49] Current Japanese guidelines on gastric cancer screening do not advocate universal screening for *H pylori*,[50] although the most recent Asia-Pacific gastric cancer consensus guidelines suggest that in high-risk countries, screening for *H pylori* infection should start beginning as early as 18 years of age, or 10 to 20 years before the initial incidence of gastric cancer begins to rise within the population. *H pylori* screening is not recommended for low-risk populations.[51]

The prevalence and incidence of *H pylori* infection in the United States varies among different racial and ethnic groups. One study from 1992 found that—when data were adjusted for age, income, and education—African Americans and Hispanics had an *H pylori* prevalence of 70% to 80%, whereas the prevalence was only 34% in Caucasians.[52] A more recent study demonstrated that among a bariatric treatment population, prevalence of *H pylori* was 36% in Hispanics, 29% in African Americans, and 15% in Caucasians ($P = .008$).[53] A study of sera collected from 1988 to 1991 as part of the National Health and Nutritional Examination Survey found age-adjusted prevalence rates of *H pylori* to be 52.7% in non-Hispanic African Americans and 61.6% in Mexican Americans, compared with 26.2% in non-Hispanic Caucasians.[54] When data were adjusted further for other risk factors, both minority groups were 2 to 3 times more likely to harbor *H pylori* infection than non-Hispanic Caucasians, although evidence suggests that *H pylori* prevalence may decrease with successive generations in the United States.[55]

The precancerous conditions mediated by chronic *H pylori* infection include atrophic gastritis (AG), intestinal metaplasia (IM), and dysplasia. In one study from the southwestern United States, the prevalence of gastric IM was significantly higher in Hispanics and African Americans combined (50%) compared with non-Hispanic Caucasians (13%).[56] This study also found that AG and IM in this population were associated with a low gastric cancer risk. A recent study examining a large, multiethnic population in the United States demonstrated that those of Hispanic and Asian ancestry were more likely to have IM and AG compared with Caucasians and African Americans.[57] There are insufficient data to support universal surveillance of AG and gastric IM, although patients at perceived increased risk of gastric cancer based on race or ethnic background or family history may benefit from surveillance for gastric IM.

In select Asian countries, biennial endoscopic, fluorographic, or upper GI radiographic screening of asymptomatic individuals for gastric cancer is performed, typically beginning around 40 years of age.[50,58] In Japan and Korea, where the prevalence of gastric cancer is among the highest in the world, screening programs may have contributed to an earlier detection and significant decrease in gastric cancer mortality,[51,59] although some studies suggest that this observed decrease also may stem from changes in diet and lifestyle.[60] Several additional studies support endoscopic screening of gastric cancer as an appropriate and cost-effective practice in mass populations with a high incidence of disease.[61-64] A recent study of cancer incidence and mortality in East Asian Americans in California found that Chinese, Vietnamese, Korean, and Japanese Americans had higher rates of death from gastric cancer than non-Hispanic European Americans, with Koreans having the greatest risk among these groups.[65] There are no studies that demonstrate a beneficial effect of endoscopic screening for gastric cancer in these high-risk racial or ethnic groups in the United States. However, in accordance with recent recommendations regarding screening for gastric cancer in populations within the Asian-Pacific region,[51] endoscopic screening for gastric cancer in first-generation U.S. immigrants from high-risk regions (ie, Japan, China, Russia, and South America) may be considered for those aged 40 years, particularly if there is a family history of gastric cancer in a first-degree relative.[66]

## COLON

### Colorectal neoplasia

Colorectal cancer (CRC) is a major public health issue in the United States because it is the second leading cause of cancer mortality.[67,68] The incidence of CRC in the United States is among the highest in the world, and screening has reduced mortality.[69-71] Differences in CRC incidence and mortality exist between racial and ethnic groups. For example, African Americans with CRC have a higher mortality risk compared with Caucasians[72,73] and a younger age at presentation.[74-76] However, it is unknown whether these differences are related to tumor biology,[77] disparities in access to health care[78] or treatment,[79] socioeconomic factors,[80] or cultural barriers.[81] A recent study on cancer incidence that used data from the National Cancer Institute Surveillance, Epidemiology, and End Results (SEER) Program[82] hypothesized that reported cancer-diagnosis age might be over-stated for the younger African American population

because of proportionally fewer African Americans in the older age group. By adjusting for differences in population age distribution, this study demonstrated a reduction in the difference in cancer-diagnosis age to <3 years.[83] Data regarding prevalence of adenomatous polyps in various race and/or ethnicity populations are mixed. An analysis of data from the Clinical Outcomes Research Initiative regarding the prevalence and location of polyps identified on screening colonoscopy determined that African American men (odds ratio [OR] 1.16; 95% CI, 1.01-1.34) and women (OR 1.62; 95% CI, 1.39-1.89) were more likely than age-matched Caucasians to have polyps >9 mm in diameter.[84] When analyzed by age, African American men ($P = .03$) and women ($P < .001$) were more likely than Caucasian men and women to have polyps >9 mm in diameter proximal to the splenic flexure. A more recent study of more than 20,000 patients also demonstrated that proximal adenomas were more common among African Americans than Caucasians, but the overall prevalence of adenomas was similar by race.[85] Recognition of differences in CRC incidence and mortality rates as well as disparities in health care among African Americans compared with Caucasians has led some to suggest that African Americans should be screened earlier than Caucasians.[3,86] This suggestion is advocated by some groups recommending that CRC screening in African American men and women begin at <50 years of age, with the preferred test being colonoscopy.[87-89] Potential advantages of this strategy are increasing awareness and possibly compliance with screening for certain racial and/or ethnic groups. The potential disadvantages are burdening the limited colonoscopy capacity, adding undue anxiety to African American patients, length-time and lead-time bias, and adding complexity to current screening guidelines, which may decrease overall compliance. Studies are needed to compare the effectiveness of earlier screening strategies in African Americans and the downstream effects of this recommendation. Variables from earlier screening that require investigation include the impact on the incidence of cancer diagnosis, differences in treatment and survival, and understanding the programmatic implications of alternative screening strategies. In the meantime, physicians should continue shared decision making with their patients, taking into account risk factors, compliance with screening, and other socioeconomic and cultural factors, and they should decide patient age for screening and modality of screening.

The latest data from SEER[82] show that CRC incidence rates in Hispanics are similar to those in non-Hispanic Caucasians and are declining. A prospective cohort study showed that both Hispanic and African American populations had rates of advanced neoplasia (10.8% and 12.2%, respectively) similar to those observed in the Caucasian population.[90] However, CRC screening rates in Hispanics are lower than in Caucasians and African Americans.[91] Although recent SEER data also suggest that CRC incidence rates in Native Americans are declining, a recent study investigating CRC incidence among American Indians and Alaskan Natives demonstrates varying trends throughout different regions of the United States.[82,92] A recent analysis of cancer incidence and mortality of various East Asian American populations in California identified a higher rate of CRC in Japanese Americans compared with other Asian populations and non-Hispanic European Americans.[65] Current data are insufficient to determine whether or not early screening in these minority populations is needed or cost-effective on a population scale. Therefore, current population-based CRC screening recommendations should be followed with these patients, with deviations based on clinical judgment.

## Screening rates and strategies

Abundant data demonstrate that CRC screening is effective in reducing colon cancer incidence and mortality,[67,93,94] and guidelines for screening are well-established. Despite this, participation in CRC screening programs among minority ethnic and racial groups lags behind that of Caucasian Americans,[95] yet these differences may be decreasing. The 2012 Behavioral Risk Factor Surveillance System survey[91] found that rates of screening (about 65%) were the same for Caucasians and African Americans. As an aggregate group, Asian Americans/Pacific Islanders have lower screening rates compared with Caucasians (54% vs 65%). Filipinos, Koreans, Pacific Islanders, and South Asians are less likely than Chinese, Japanese, and Vietnamese to receive colorectal cancer screening.[96,97]

As screening programs develop and evolve for GI-related cancers, it is imperative to ascertain or be cognizant of factors among ethnic and racial groups that may impede participation. These factors may include differences in socioeconomic status, access to health care, cultural attitudes, religious beliefs, and communication barriers.[98-100] Many public health intervention programs have explored these variables to maximize screening among minority groups. Tailored patient education programs with navigation services may improve compliance with CRC screening[99,101,102] and may be adequate to overcome cultural obstacles to screening. Several studies have suggested that specialized strategies for screening recruitment, such as proactive mailing of fecal occult stool testing cards, physician-directed recommendations, and broadening colon cancer screening modality options may increase screening in specific racial and/or ethnic groups.[99,103-105] Further research is necessary to explore and refine approaches to maximizing participation among diverse groups.

In summary, several GI diseases demonstrate racial and ethnic differences in epidemiology. Practitioners should be aware of these differences, because alteration of diagnostic and management strategies may help reduce racial and ethnic disparity in health care outcomes. As screening programs develop and evolve, health care providers should be cognizant of socioeconomic and cultural factors that may impact participation.

## DISCLOSURE

*K. Chathadi and V. Chandrasekhara are consultants to Boston Scientific. R. Fanelli is the owner and director of New Wave Surgical, owner of Allusion Technologies, owner of Mosaic Medical, advisor and receiver of royalties from Cook Surgical, and consultant to Endogastric Solutions. M. Khashab is a consultant to and member of the Medical Advisory Board for Boston Scientific and a consultant to Olympus and receives research support from Cook Medical. V. Muthusamy is a consultant to Boston Scientific and Covidien GI Solutions and is a stockholder in CapsoVision. All other authors disclosed no financial relationships relevant to this publication.*

## RECOMMENDATIONS

1. Although Caucasian race is a recognized risk factor for Barrett's esophagus, we suggest that screening EGD for Barrett's esophagus or esophageal cancer should be based on the presence of multiple risk factors rather than ethnicity alone. ⊕⊕◯◯
2. We do not recommend screening EGD for squamous cell carcinoma based solely on race or ethnicity because of insufficient supporting evidence. ⊕◯◯◯
3. We suggest screening for and treating *H pylori* in racial and/or ethnic groups at high risk for gastric cancer. ⊕⊕◯◯
4. We suggest EGD for surveillance in patients with gastric atrophic gastritis or intestinal metaplasia coupled with an increased risk of gastric cancer because of ethnic background, extensive anatomic distribution, or family history. ⊕⊕◯◯
5. Screening EGD for gastric cancer may be considered in new U.S. immigrants from high-risk regions around the world including Korea, Japan, China, Russia, and South America, especially if there is a family history of gastric cancer in a first-degree relative. ⊕⊕◯◯
6. We suggest that CRC screening strategies be emphasized and personalized for minority racial and ethnic groups who have lower screening utilization rates. ⊕⊕◯◯

*Abbreviations: ASGE, American Society for Gastrointestinal Endoscopy; AG, atrophic gastritis; BE, Barrett's esophagus; CRC, colorectal cancer; EAC, esophageal adenocarcinoma; IM, intestinal metaplasia; SCC, squamous cell carcinoma; SEER, Surveillance, Epidemiology, and End Results.*

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