Targeted Population Screening for Gastric Cancer

COLUMBIA UNIVERSITY
MEDICAL CENTER

February 9, 2024

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Faculty Disclosures

Financial/industry relationships within the past 36 months:
Value Analytics: Consulting Fees
Exact Sciences: Consulting Fees
Vivante Health: Advisory Board
Cambridge Biomedical and Economic Consulting Group: Founder

None directly relevant to this presentation.

Relevant NIH Grant Funding
Colorectal Cancer Screening, Lynch Syndrome: R01CA257333

Gastric Cancer Screening and Prevention: U01CA265729

NIH NATIONAL CANCER INSTITUTE
Cancer Intervention and Surveillance Modeling Network

Presentation Overview

Gastric Cancer (GC)

- Epidemiology
  - Global Burden
  - US: Disparities
  - Prevention and Modifiable Risk Factors
- Carcinogenesis Pathway: *Precursors an Opportunity for Early Detection and Intervention*
- Gastric Cancer Screening and Surveillance in East Asia
  - Endoscopic Lessons Learned
- AGA Guidelines and Practice Summary

Patient Presentation #1

- 50 year East Asian man who emigrated from Korea to NYC as a teenager.
- He is asymptomatic and in overall good health but is asking you if he should have a Screening EGD.

- ***Who should have screening endoscopy for GC?***

Patient Presentation #2

- 45 year old woman who underwent an EGD for dyspepsia symptoms.
- EGD Findings
  - Esophagus: normal
  - Stomach: mild erythema in the antrum
  - Duodenum: normal
- Biopsy of antrum is Hp negative, but has a focus of Intestinal Metaplasia in background of chronic atrophic gastritis
- “Doctor, what’s next?”

Global Gastric Cancer Epidemiology

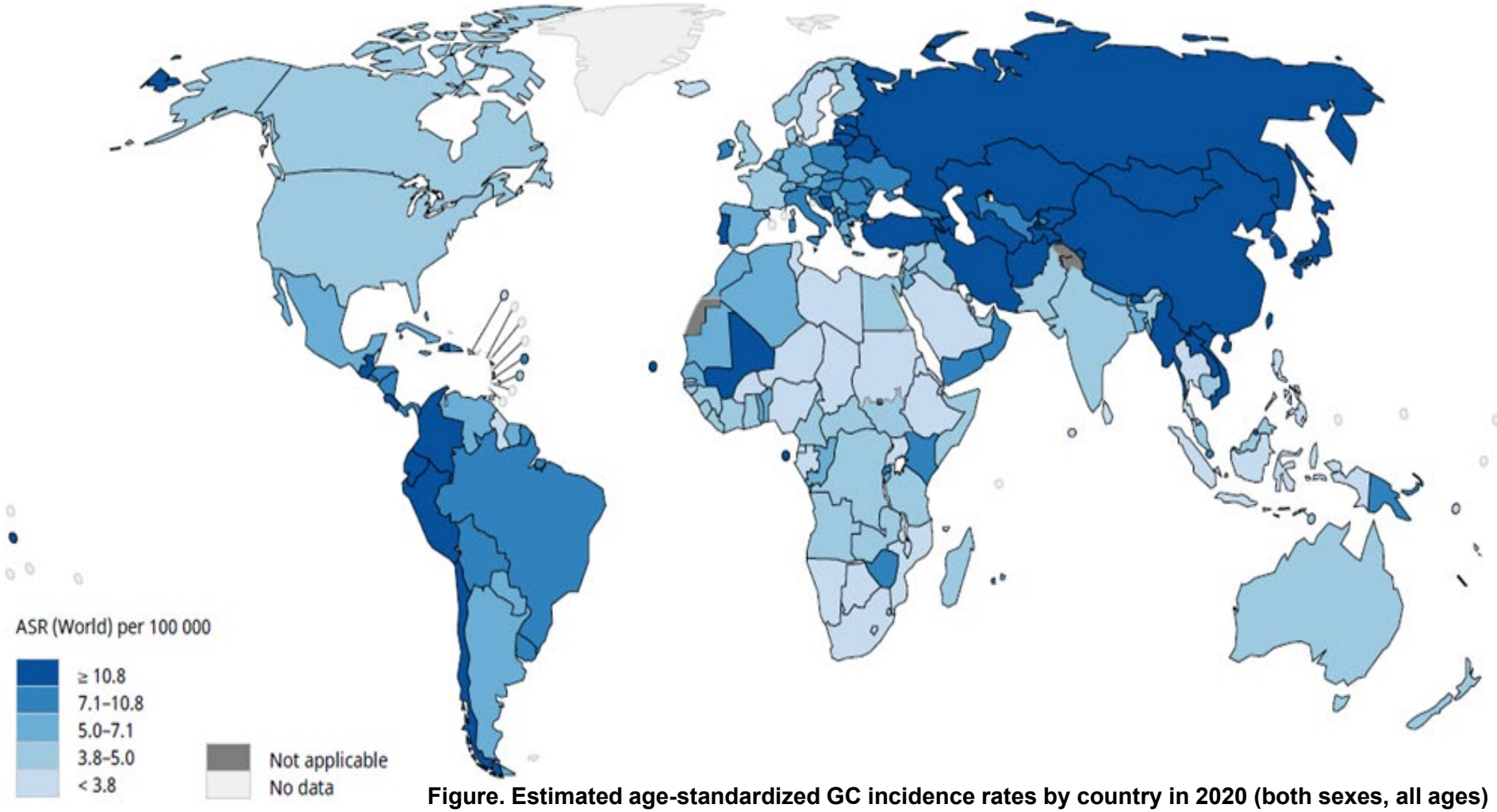
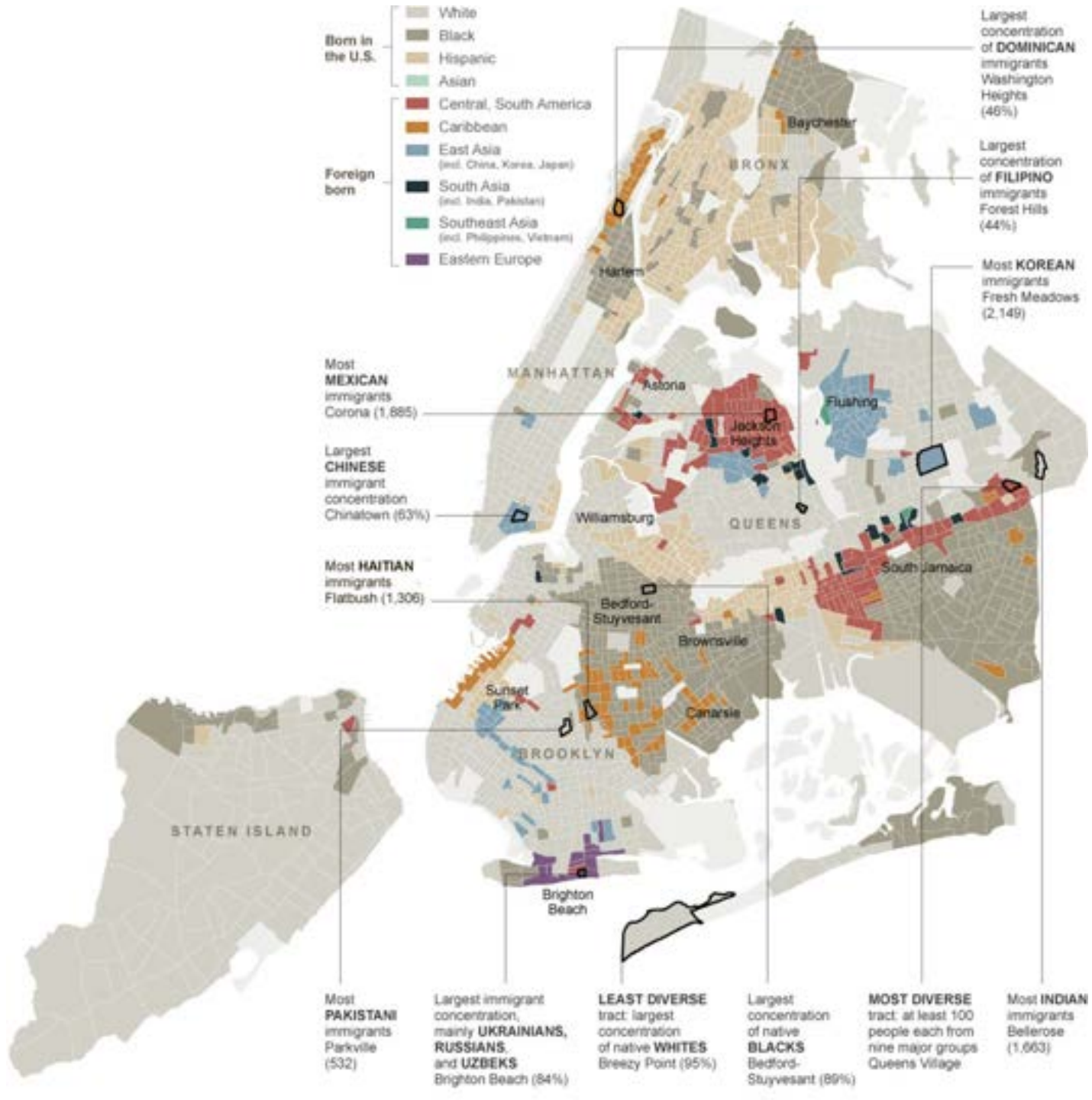


Figure. Estimated age-standardized GC incidence rates by country in 2020 (both sexes, all ages)

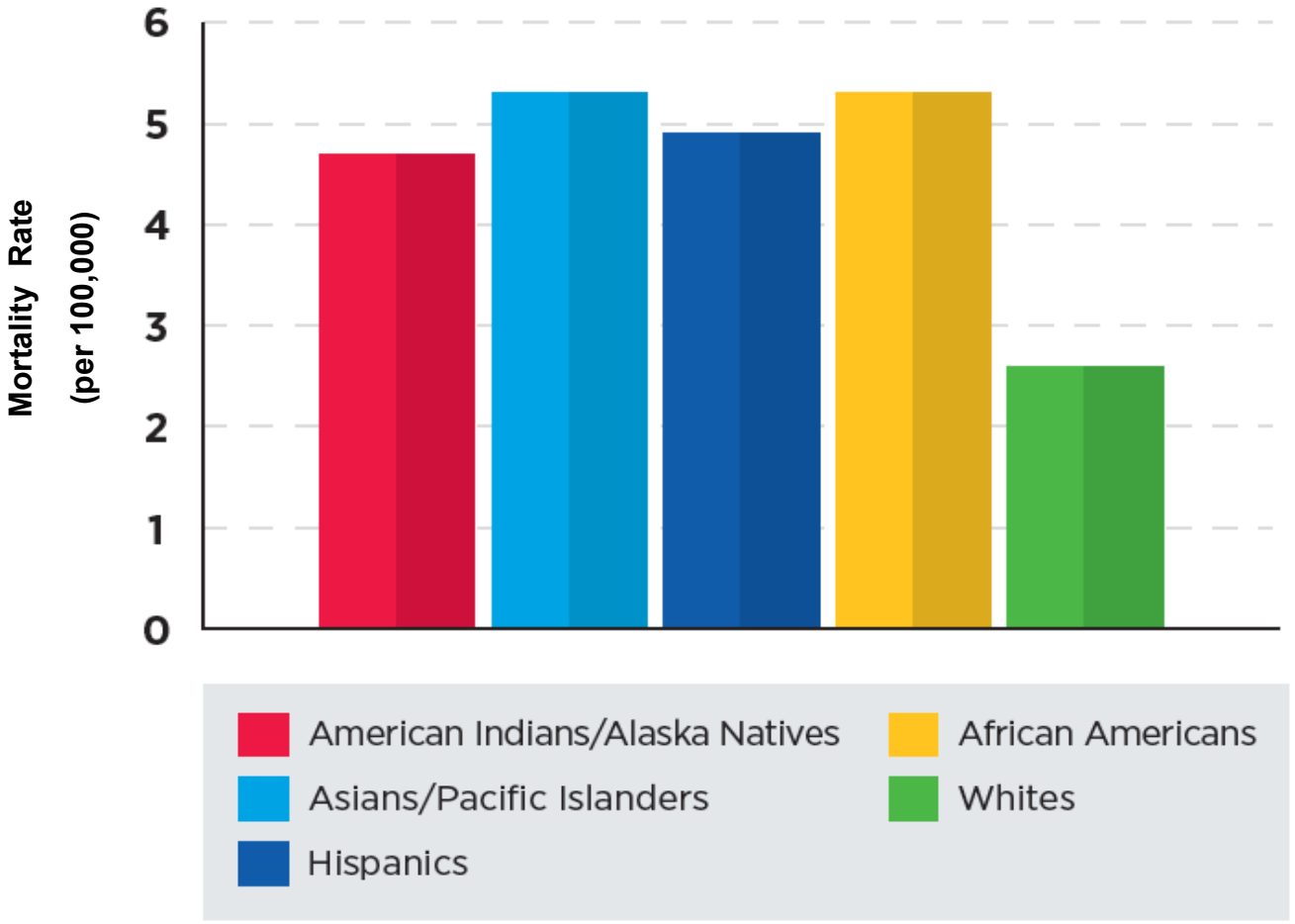
Globally

- 5th incidence, 3rd mortality
- > 1 million cases/year
- Hp Infection ~89% of Non-Cardia GC
- WHO designated "***Neglected Cancer***"


Born in the U.S.
White
Black
Hispanic
Asian
Foreign born
Central, South America
Caribbean
East Asia
(incl. China, Korea, Japan)
South Asia
(incl. India, Pakistan)
Southeast Asia
(incl. Philippines, Vietnam)
Eastern Europe
Largest concentration of DOMINICAN immigrants Washington Heights (46%)
Largest concentration of FILIPINO immigrants Forest Hills (44%)
Most KOREAN immigrants Fresh Meadows (2,149)
Most MEXICAN immigrants Corona (1,885)
Largest CHINESE immigrant concentration Chinatown (63%)
Most HAITIAN immigrants Flatbush (1,306)
Most PAKISTANI immigrants Parkville (532)
Largest immigrant concentration, mainly UKRAINIANS, RUSSIANS, and UZBEKS Brighton Beach (84%)
LEAST DIVERSE tract: largest concentration of native WHITES Breezy Point (95%)
Largest concentration of native BLACKS Bedford-Stuyvesant (89%)
MOST DIVERSE tract: at least 100 people each from nine major groups Queens Village
Most INDIAN immigrants Bellerose (1,663)
Baychester
BRONX
Harlem
MANHATTAN
Astoria
Jackson Heights
Flushing
Williamsburg
QUEENS
South Jamaica
Bedford-Stuyvesant
Brownsville
Sunset Park
Canarsie
BROOKLYN
STATEN ISLAND
Brighton Beach

Gastric Cancer is a Major Source of Cancer **Disparities** among Racial/Ethnic Groups in US

Figure. GC mortality rates by race/ethnicity



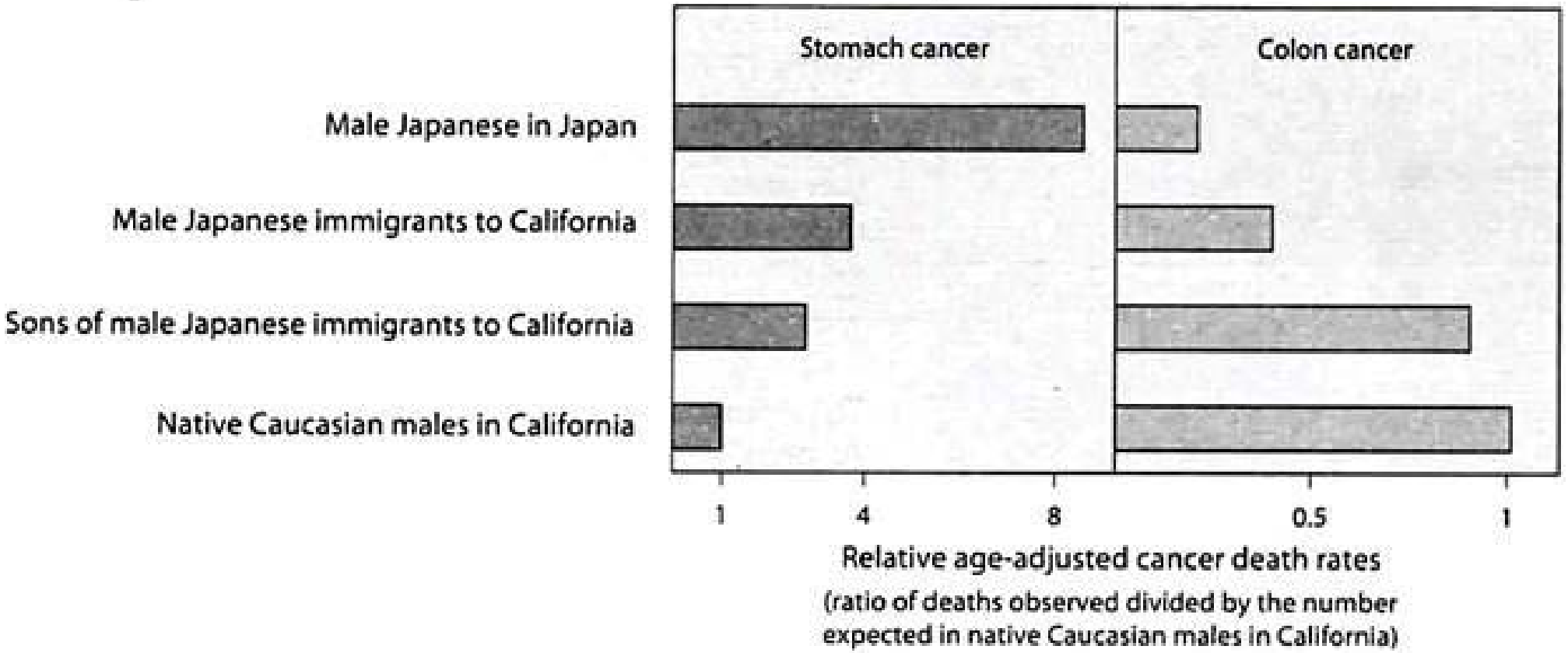
US

- 27,500 cases and 11,000 deaths
- Rise in Early Onset GC (age 25-50)
- GC Top Ranking Cancer in terms of mortality disparities
- GC is the least funded cancer in the US

Stomach Cancer Risk in Foreign Born

CANCER RESEARCH 35, 3240-3245, November 1975

Cancer Epidemiology in Populations of the United States—with Emphasis on Hawaii and California—and Japan[1]



Personal Food Journey of a Korean Immigrant

Transition from Korean → American Diet

What can we do to lower our risk of gastric cancer?

- Gastric Cancer (GC) Risk Factors
  - Not Modifiable: Family History/Genetic Syndrome, Sex, Conditions Chronic Inflammation
  - Modifiable: **Hp Infection**, Smoking, Obesity
    - **Diet**
      - High Salt
      - Smoked, Processed Meat
      - Low Fruit and Vegetable

Intestinal GC Carcinogenesis Pathway:
Opportunity for Early Detection and Prevention

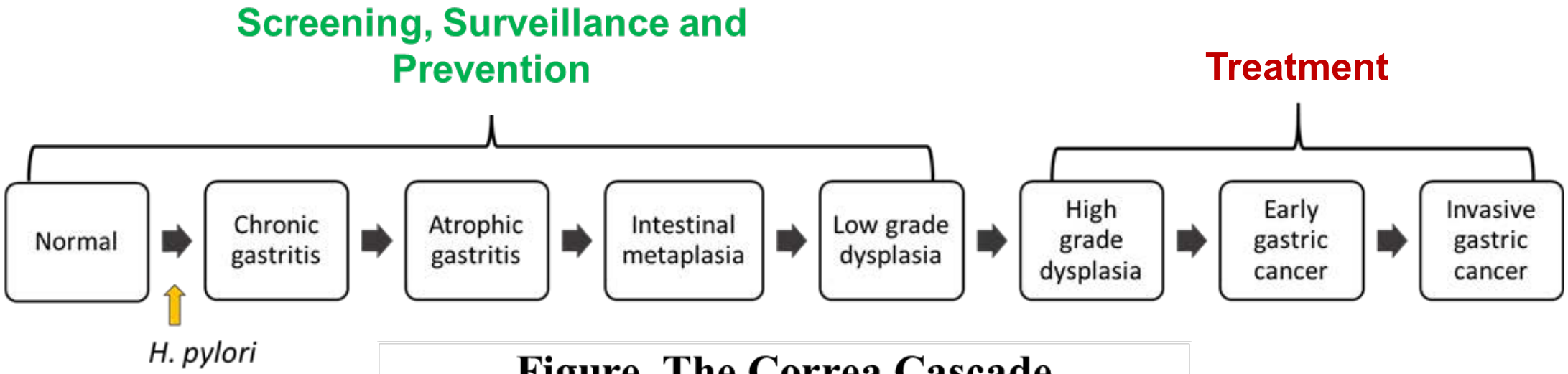
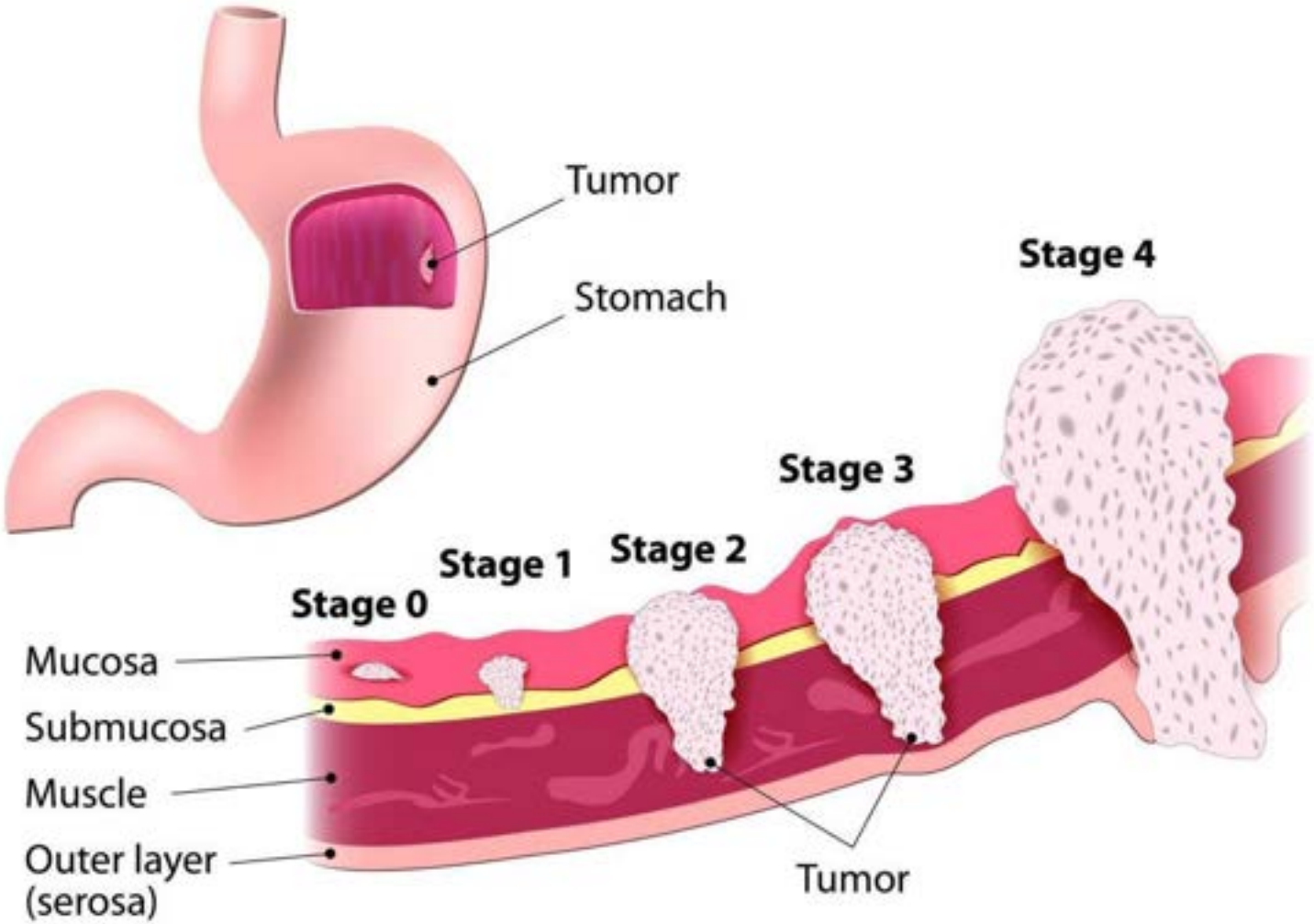


Figure. The Correa Cascade

STAGES OF STOMACH CANCER



Endoscopic Submucosal Resection (ESD)

Kim, Journal of Gastric Cancer 2011

Quest to Become a Better Gastric Cancer Endoscopist

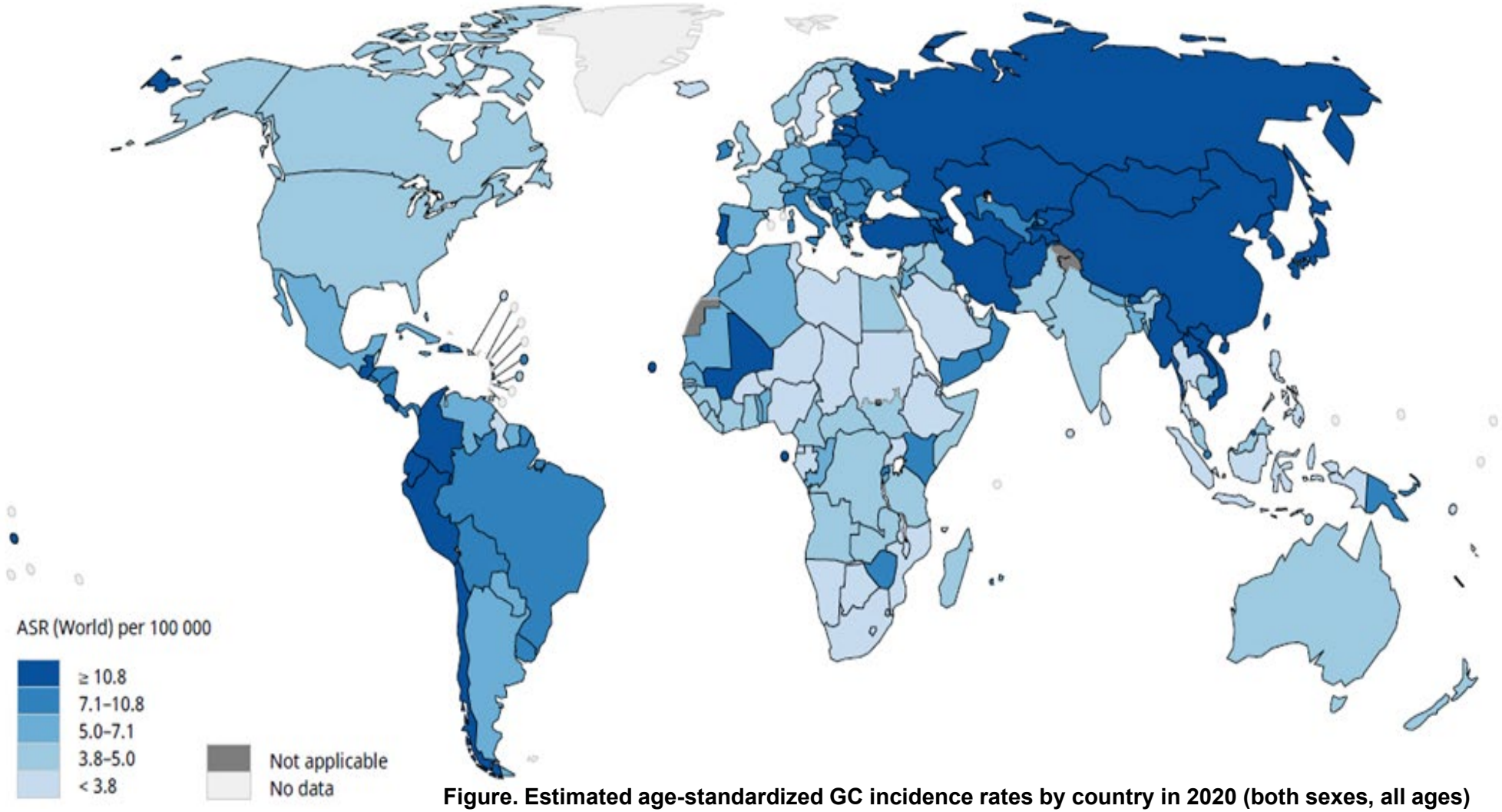


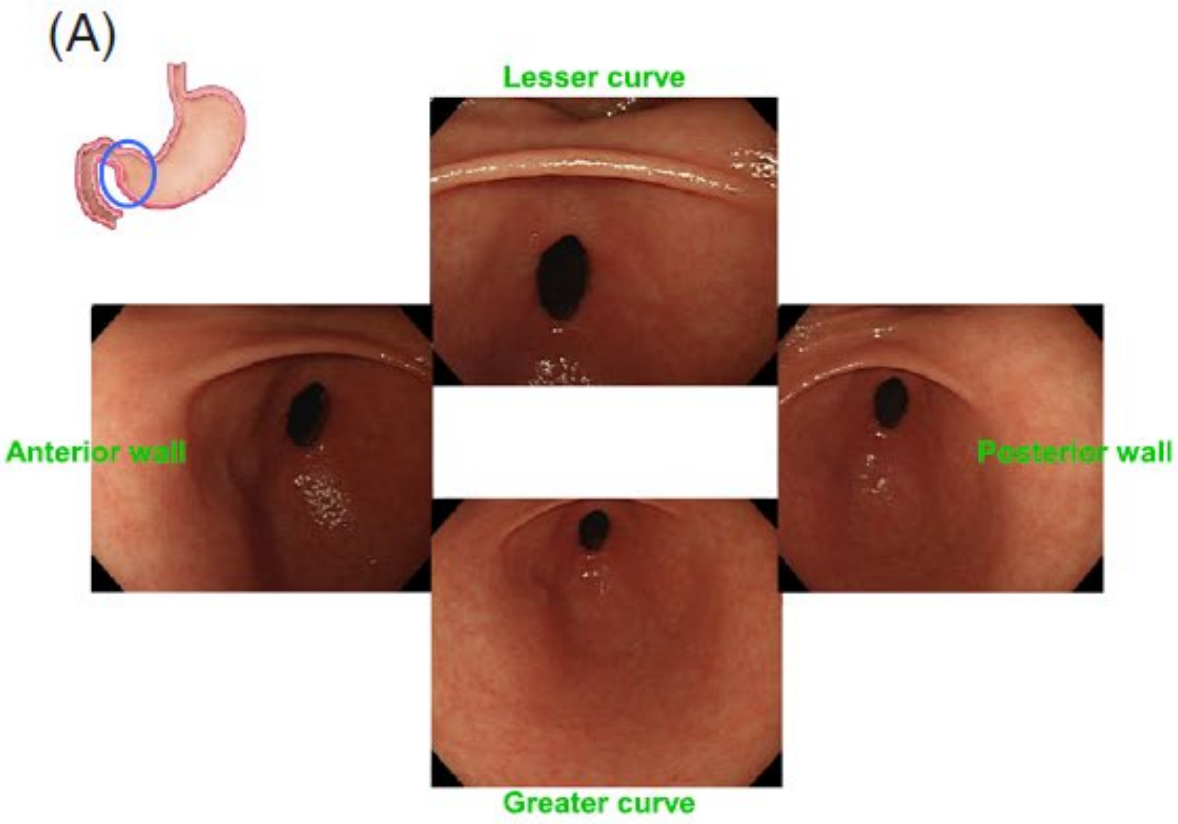
Figure. Estimated age-standardized GC incidence rates by country in 2020 (both sexes, all ages)

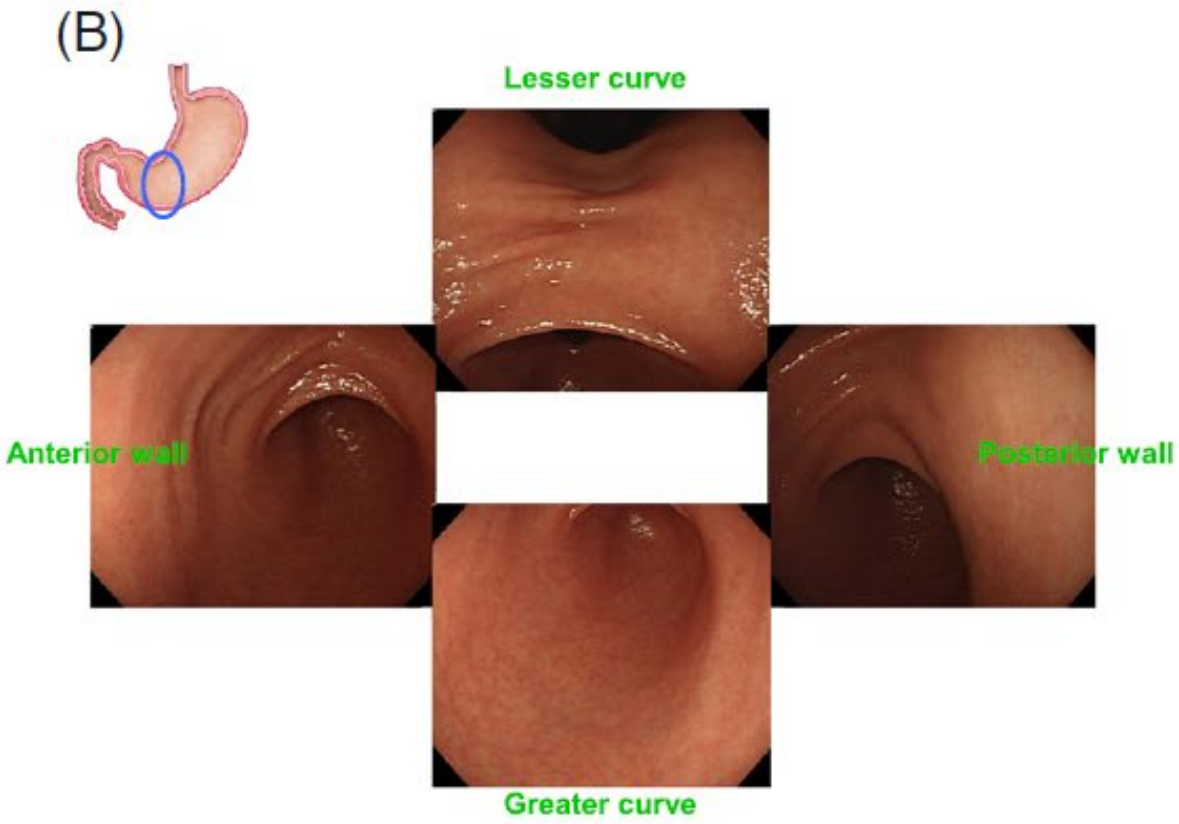
Quest to improve GC endoscopic skill...

Trip #1: U of Tokyo and National Cancer Center

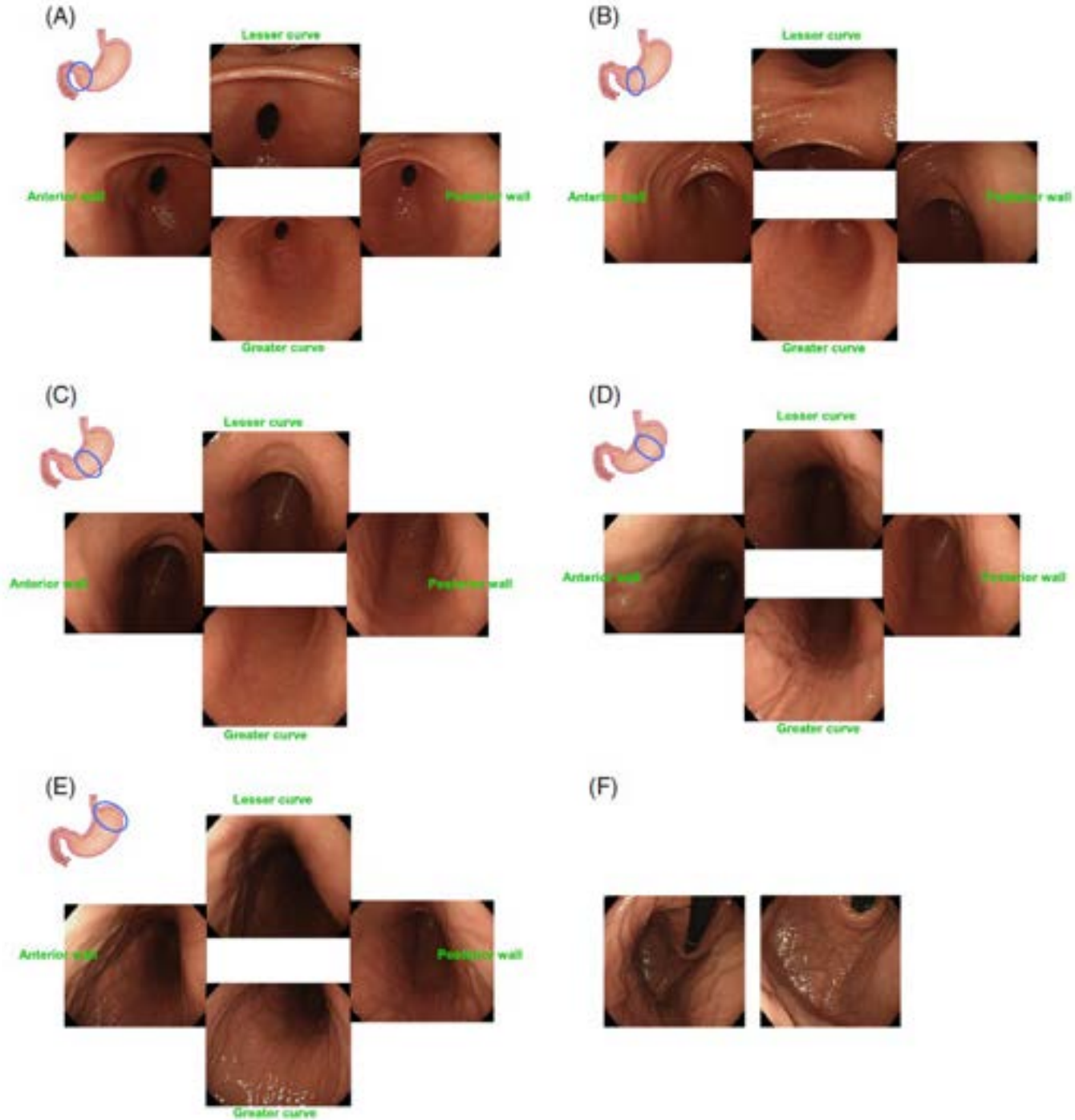
U of Tokyo Cafeteria

Endoscopic Screening for Gastric Cancer in Japan
No Biopsies, Photo Mapping



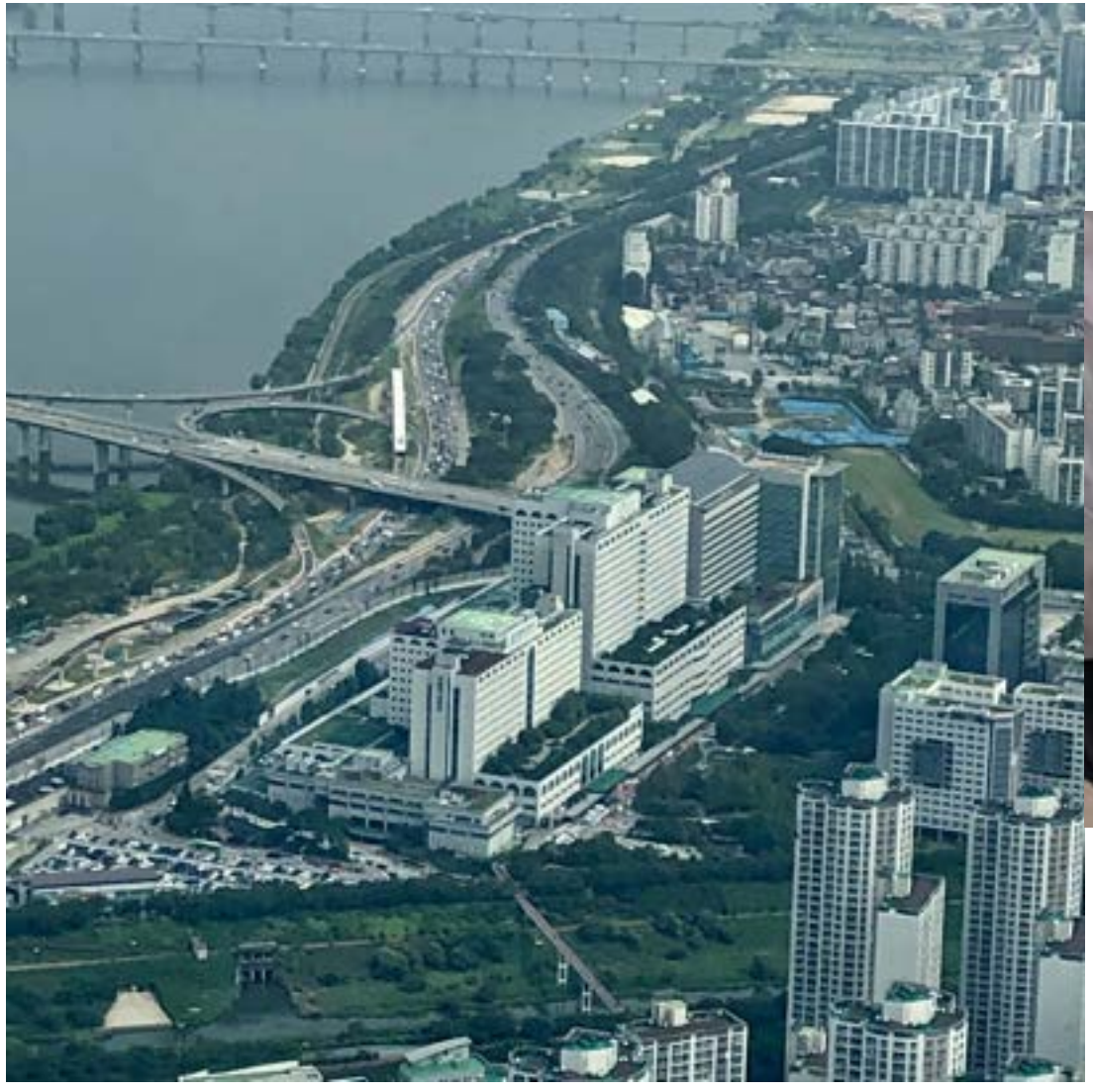


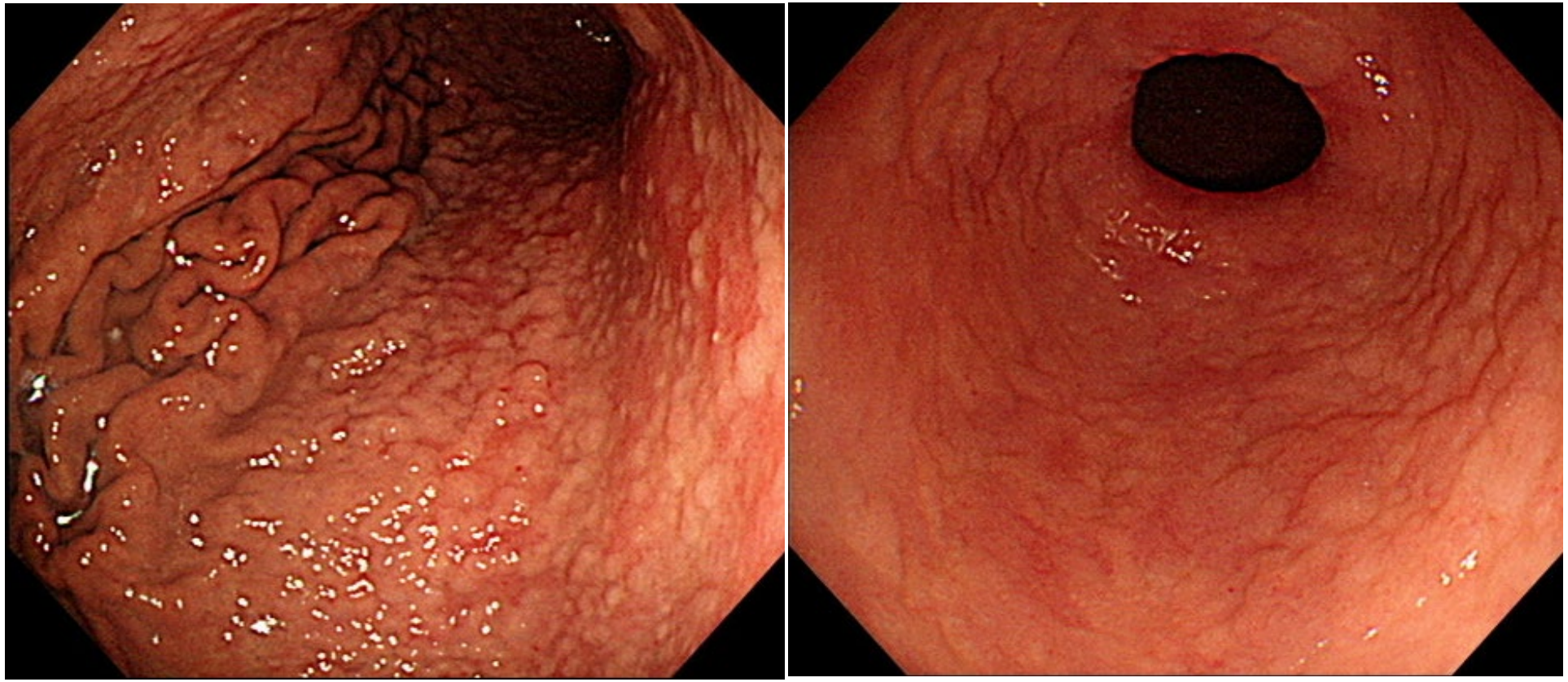
Gotoda Digestive Endoscopy 2016


(A)
Lesser curve
Anterior wall
Posterior wall
Greater curve
(B)
Lesser curve
Anterior wall
Posterior wall
Greater curve
(C)
Lesser curve
Anterior wall
Posterior wall
Greater curve
(D)
Lesser curve
Anterior wall
Posterior wall
Greater curve
(E)
Lesser curve
Anterior wall
Posterior wall
Greater curve
(F)

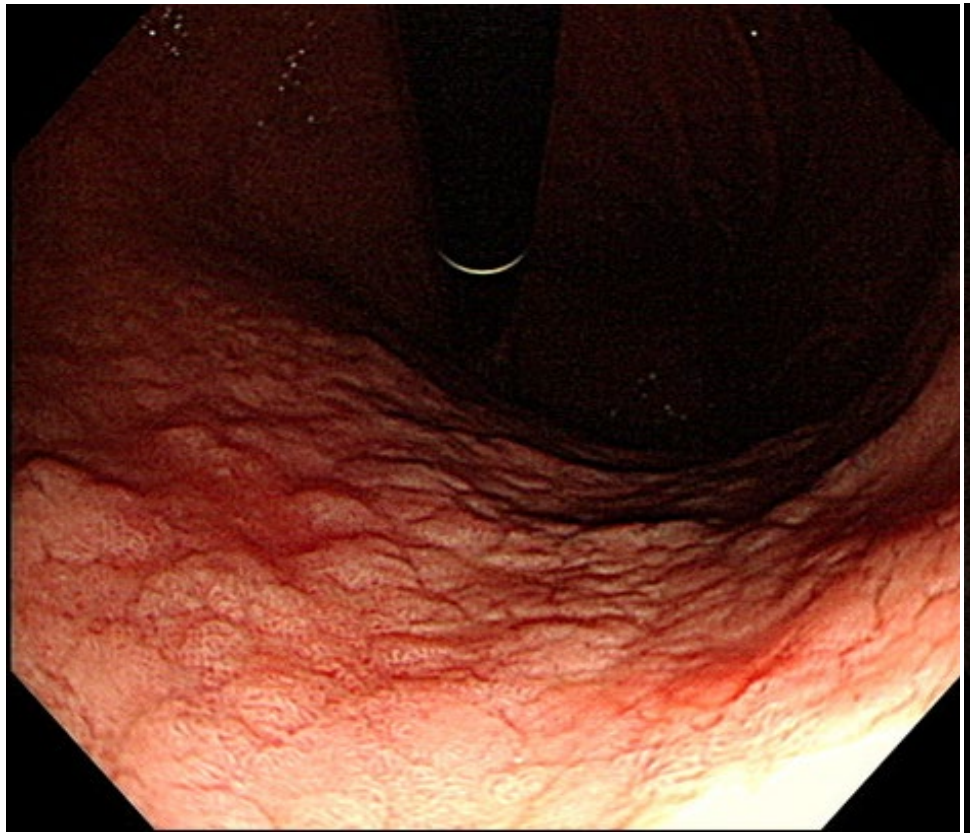
Quest to improve GC endoscopic skill...

Trip #2: Asan Medical Center in Seoul





Courtesy:
Dr. Hwoon-Yong Jung, Asan Medical Center



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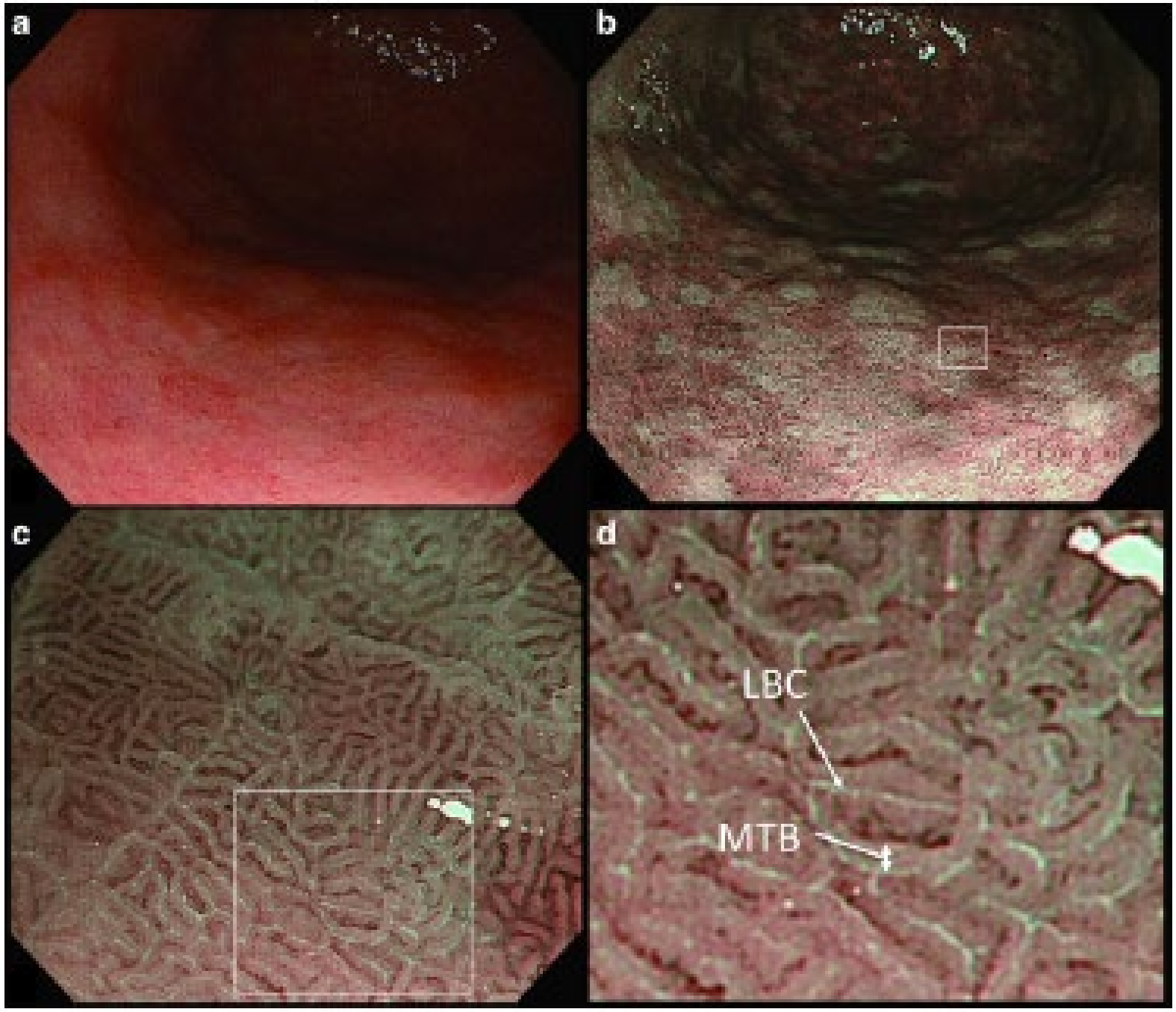


Figure 4 Intestinal metaplasia. (a) Under white light endoscopy (WLE), mucosa with intestinal metaplasia appears as flat or slightly elevated whitish patches. (b) On narrow band imaging (NBI) they become apparent. With magnification, intestinal metaplasia appear as white turbid bands (marginal turbid bands [MTB]) in the micromucosal crests and have a fine blue-white line of light (light blue crest [LBC]) on the outer border of the crests (c and d, c represents white square in b, d represents white square in c). Settings: processor CV290; videoendoscope EVIS-FQ260Z; contrast enhancement B5 in WLE and B8 in NBI. Color tone enhancement: 1.

Singh Digestive Endoscopy 2014

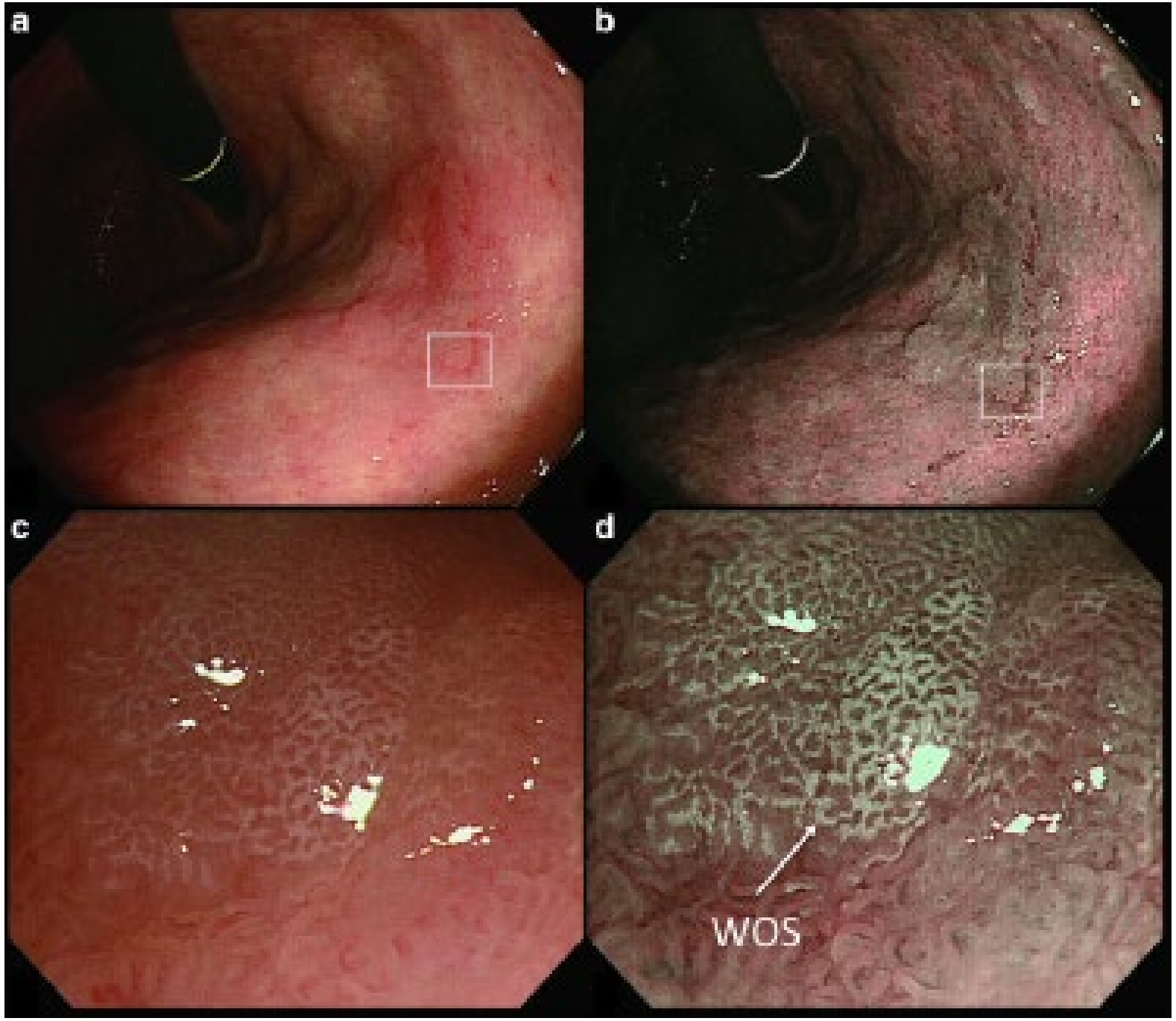


Figure 6 White opaque substance (WOS) in stomach. Superficial-type early gastric cancer in the lesser curvature of the corpus (a and b). On magnified white light endoscopy (WLE) and narrow band imaging (NBI), WOS is observed on the tumor (WLE: c, white box in a) and (NBI: d, white box in b). Settings: processor CV290; videoendoscope EVIS-FQ260Z; contrast enhancement B5 in WLE and B8 in NBI. Color tone enhancement: 1.

Singh Digestive Endoscopy 2014

You have had a screening colonoscopy but you have NOT had a GC screening EGD?

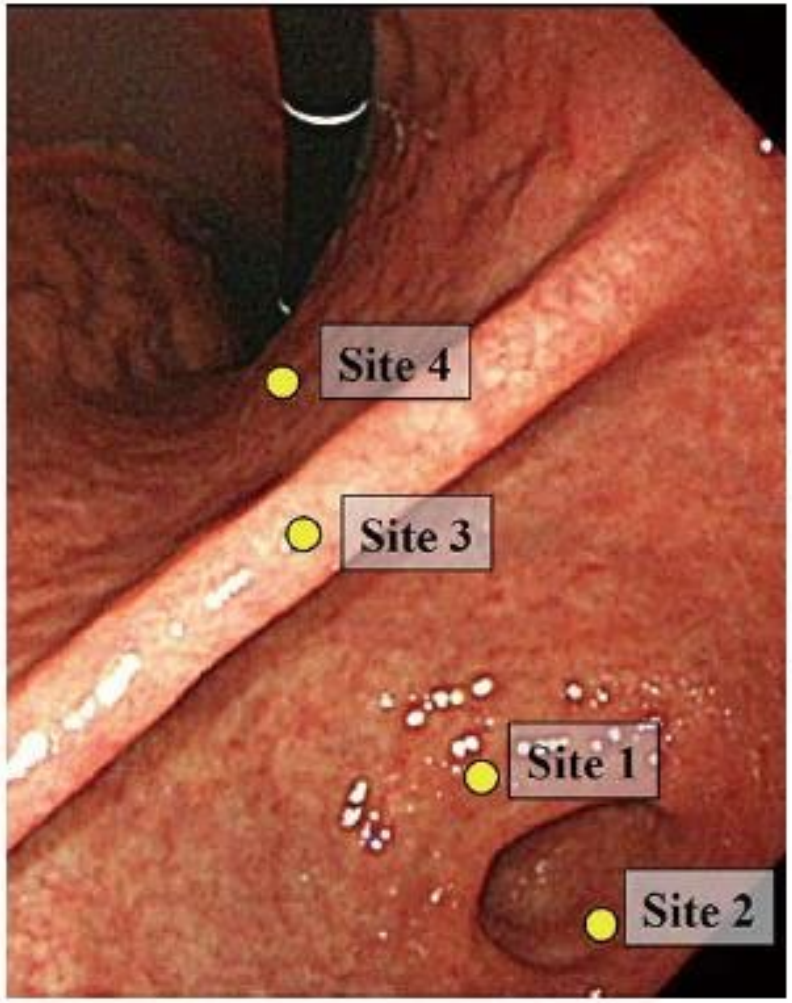
Let's go to the videotape…

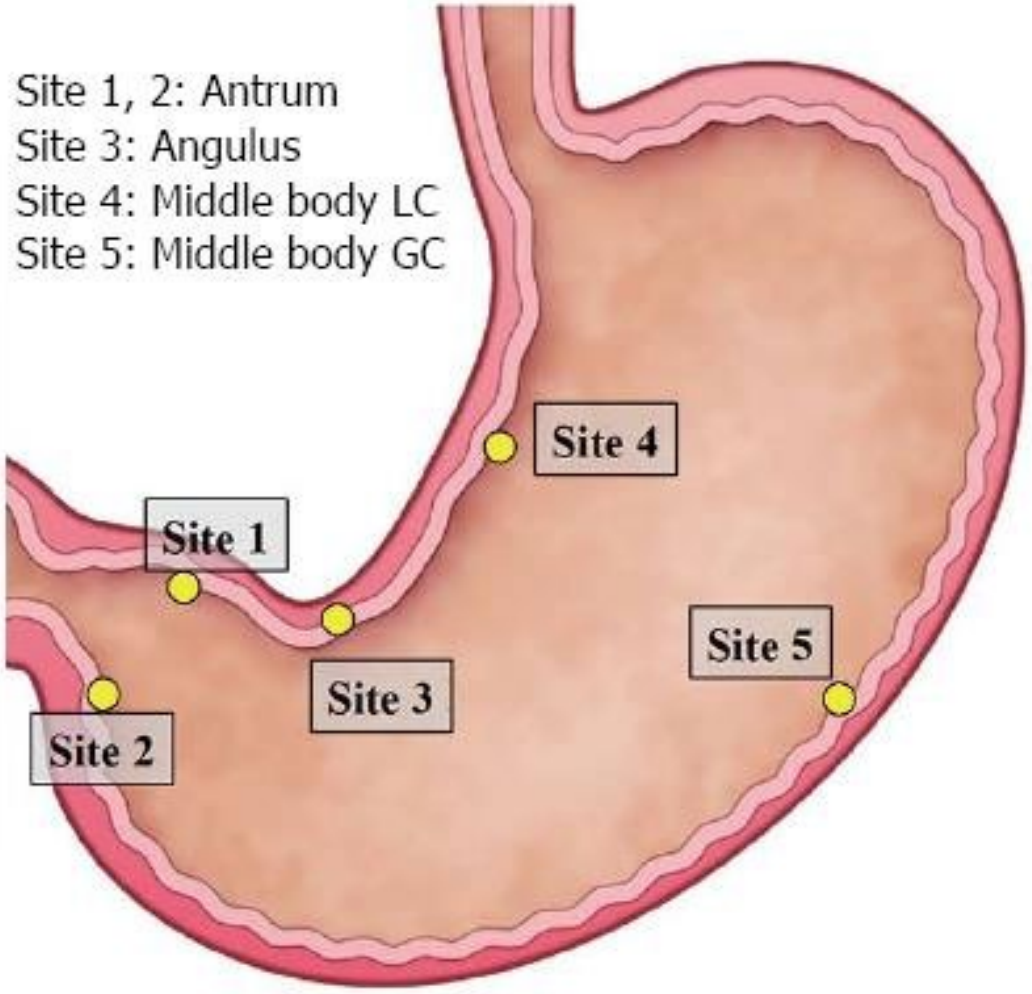
Unsedated EGD is not that bad

Lessons Learned from Japan and Korea: My Clinical Practice

- Look carefully: both time and quality, 7 minutes in stomach is goal
  - High Resolution, Enhanced Imaging, High Magnification
    - Many photos for “optical gastric mapping”
  - Irrigation and washing (simethicone)
  - Repeated insufflation and deflation to fully visualize all gastric mucosa
  - White Light examination → Repeat with NBI examination
  - Targeted biopsies of any visualized abnormalities
  - Sydney Biopsy protocol for IM surveillance

Endoscopic Surveillance:
Sydney Biopsy Protocol





Kono World J Gastro 2015

Patient Presentation #1
Screening EGD for GC in US

- 50 year East Asian man who emigrated from Korea to NYC as a teenager.
- He is asymptomatic and in overall good health but is asking you if he should have a Screening EGD.

Who should have screening endoscopy for GC?

- ***No US guidelines:*** *Korea, Japan, Chile, Venezuela*
- *Pernicious Anemia, Genetic Syndromes, Family History*
- *Risk Factors and Foreign Born from Endemic Region?*
  - *Other clinical indications (e.g. GERD symptoms, dyspepsia)*
  - *Concomitant EGD at time of CRC screening in patients in high risk patients?*

Patient Presentation #2

- 45-year-old woman who underwent an EGD for dyspepsia symptoms.
- EGD Findings
  - Esophagus normal
  - Stomach within normal limits, mild erythema in the antrum
  - Duodenum normal
- Biopsy of antrum is Hp negative, but has a focus of **Intestinal Metaplasia** in background of chronic atrophic gastritis
- “Doctor, what’s next?”

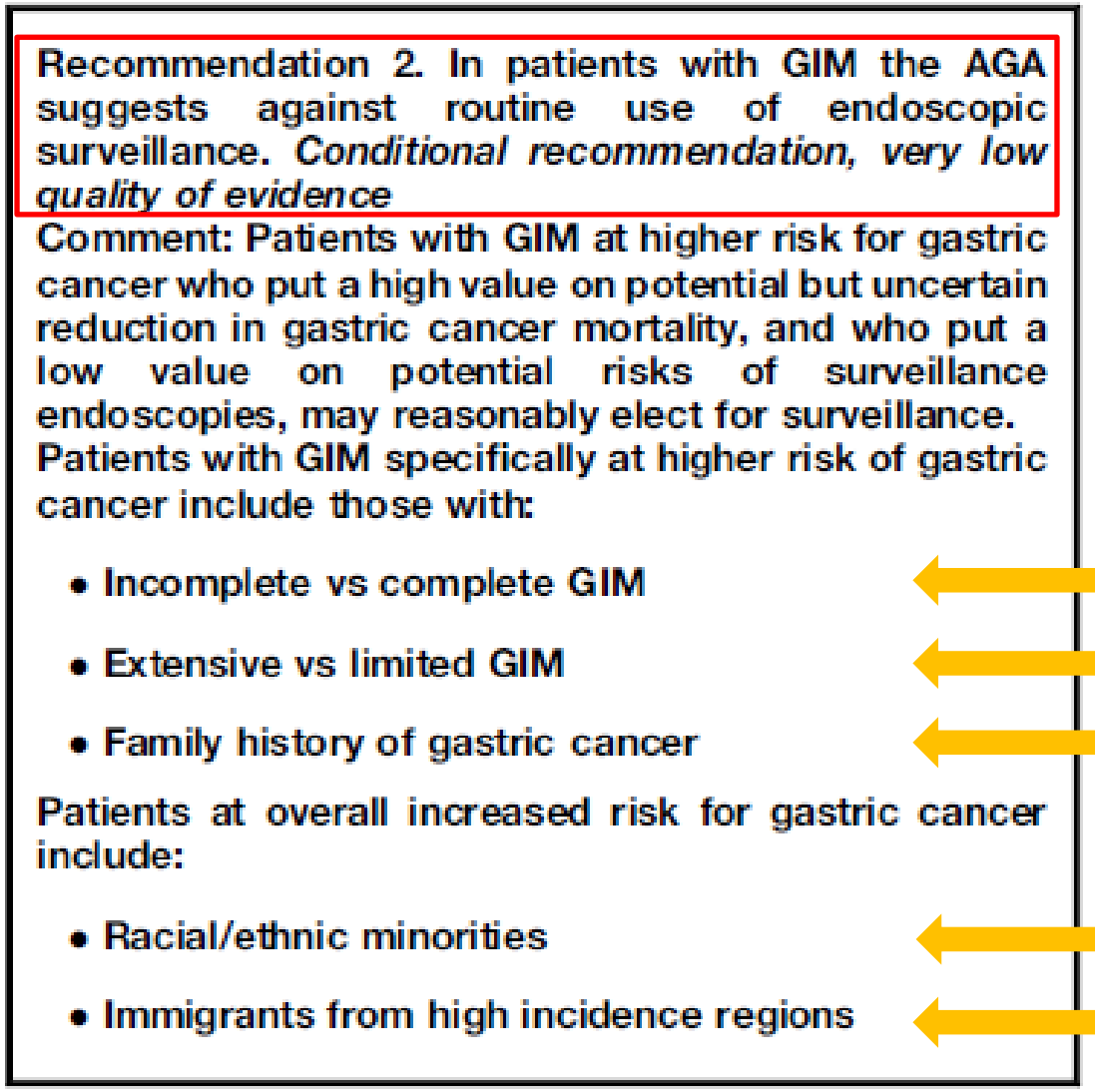
AGA Gastric IM Guidelines 2020

- Hp Test and Treat → YES
  - Test for eradication after treatment
    - Urea Breath Test (UBT) most sensitive

> **Recommendation 1.** In patients with GIM, the AGA recommends testing for *H pylori* followed by eradication over no testing and eradication. *Strong recommendation, moderate quality of evidence.*

AGA Gastric IM Guidelines 2020

- Endoscopic Surveillance
  - Conditional Against Routine Surveillance
  - Shared decision making for **high-risk** patients with estimated 10-year risk of 1.6% or greater
  - Repeat EGD within 1 year, and then every 3-5 years



Clinical Summary
Screening

GC Screening

- High Risk Individuals: Pernicious Anemia, Genetic Syndromes, Family History
  - Sub-Populations: Race/Ethnicity, Foreign Born, Diet, Smoking, Obesity
  - Same time as Screening Colonoscopy?

Clinical Summary
GIM Surveillance

GIM Surveillance

- Test and Treat for Hp
  - Check for eradication (UBT), Stool Ag
- If incidentally detected GIM, repeat EGD within 1 year for thorough 7-minute gastric examination EGD, with gastric mapping biopsies
- High risk for progression?
  - Repeat EGD in 3 years

Columbia Stomach Cancer Screening Center
Velocity Ride for Columbia Cancer Center

Questions