Barrett's Esophagus – New Guidelines

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Barrett's Esophagus

CME

Diagnosis and Management of Barrett's Esophagus: An Updated ACG Guideline

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Barrett's esophagus (BE) is a common condition associated with chronic gastroesophageal reflux disease. BE is the only known precursor to esophageal adenocarcinoma, a highly lethal cancer with an increasing incidence over the last 5 decades. These revised guidelines implement Grading of Recommendations, Assessment, Development, and Evaluation methodology to propose recommendations for the definition and diagnosis of BE, screening for BE and esophageal adenocarcinoma, surveillance of patients with known BE, and the medical and endoscopic treatment of BE and its associated early neoplasia. Important changes since the previous iteration of this guideline include a broadening of acceptable screening modalities for BE to include nonendoscopic methods, liberalized intervals for surveillance of short-segment BE, and volume criteria for endoscopic therapy centers for BE. We recommend endoscopic eradication therapy for patients with BE and high-grade dysplasia and those with BE and low-grade dysplasia. We propose structured surveillance intervals for patients with dysplastic BE after successful ablation based on the baseline degree of dysplasia. We could not make recommendations regarding chemoprevention or use of biomarkers in routine practice due to insufficient data.

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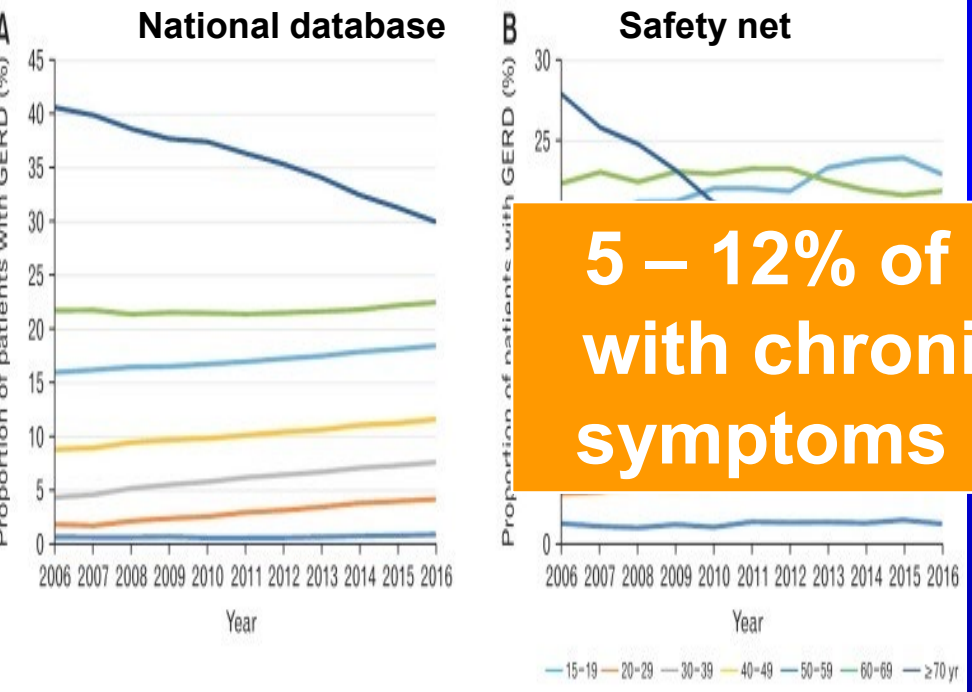
INTRODUCTION

Barrett's esophagus (BE) is a metaplastic change of the distal

guideline in addition to patient-specific medical comorbidities, health status, and preferences to arrive at a patient-centered care approach.

Shaheen NJ et al. Am J Gastroenterol. 2022 Apr 1;117(4):559-587.

Gastroesophageal Reflux Disease and Barrett's Esophagus – Are Patients Getting Younger?



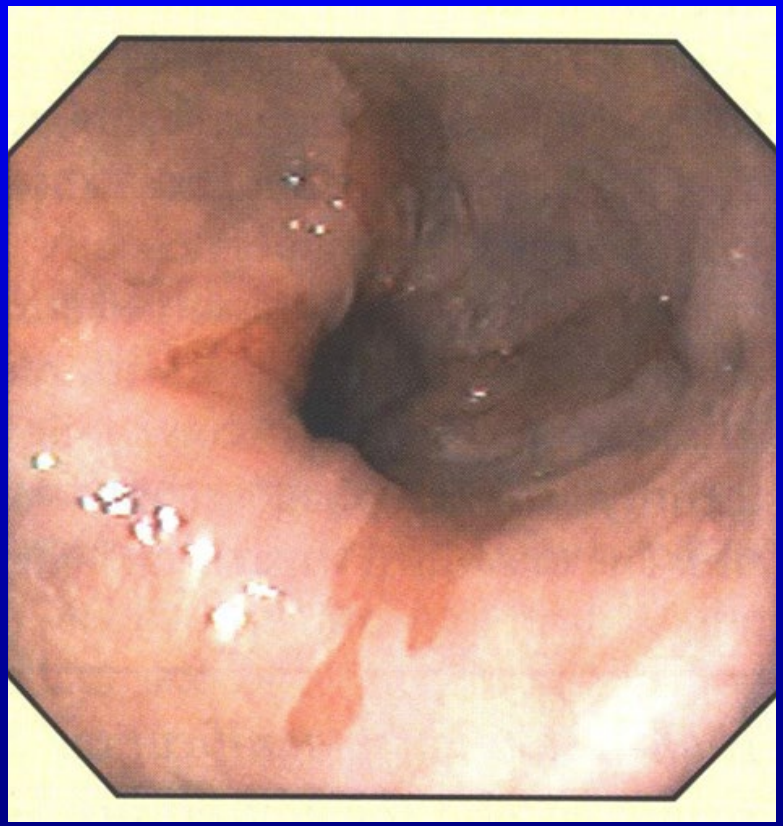
5 – 12% of patients with chronic GERD symptoms have BE

Age group	15-19	20-29	30-39	40-49	50-59	60-69	>70
	The proportion of patients (%)						
			1.2	4.3	12.2	24.6	57.6
			3.3	7.9	19.1	30.8	37.8
Changing rate (%)			175	84	57	25	-34

Yamasaki T et al. J Neurogastroenterol Motil. 2018 Oct 1;24(4):559-569

Yamasaki et al. Esophagus. 2020 Apr;17(2):190-196

Barrett's Esophagus - Definition



Barrett's esophagus (BE) is a metaplastic change of the distal esophagus, whereby the normal squamous epithelium is replaced by specialized columnar epithelium with goblet cells

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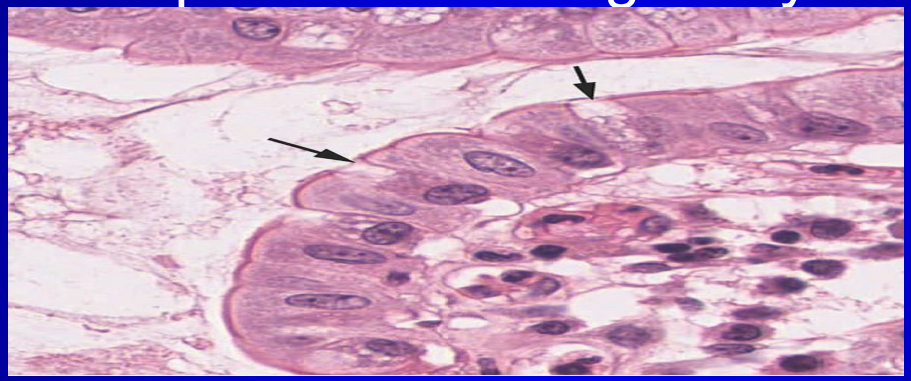
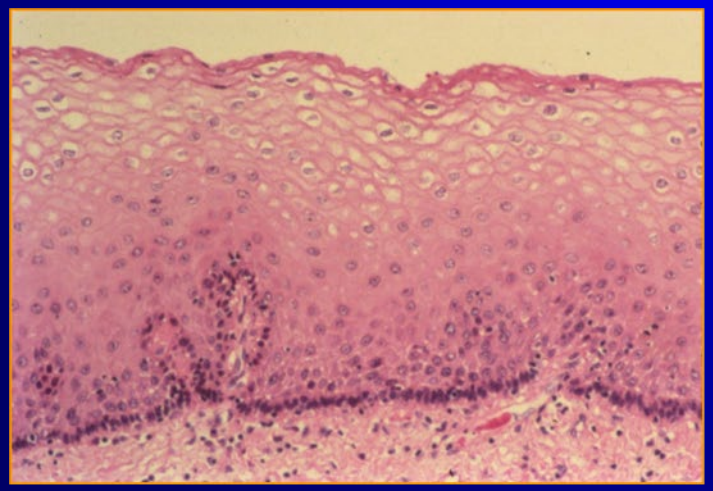
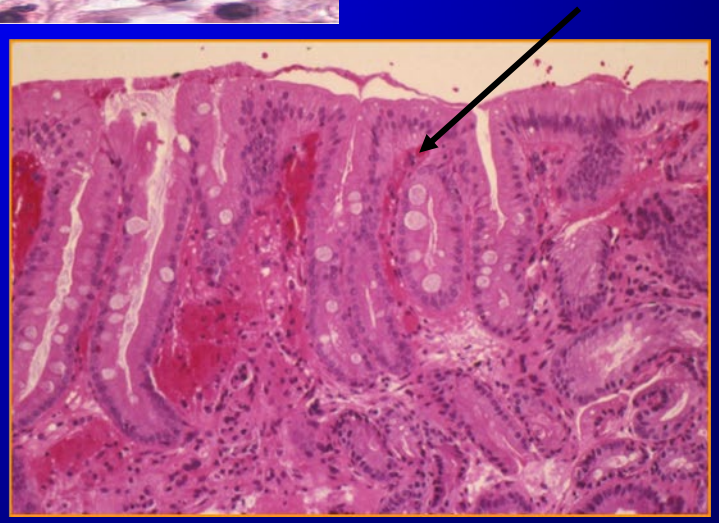
Intestinal Metaplasia: Clinical Significance

- The presence of Intestinal metaplasia in BE predisposes patients to malignancy

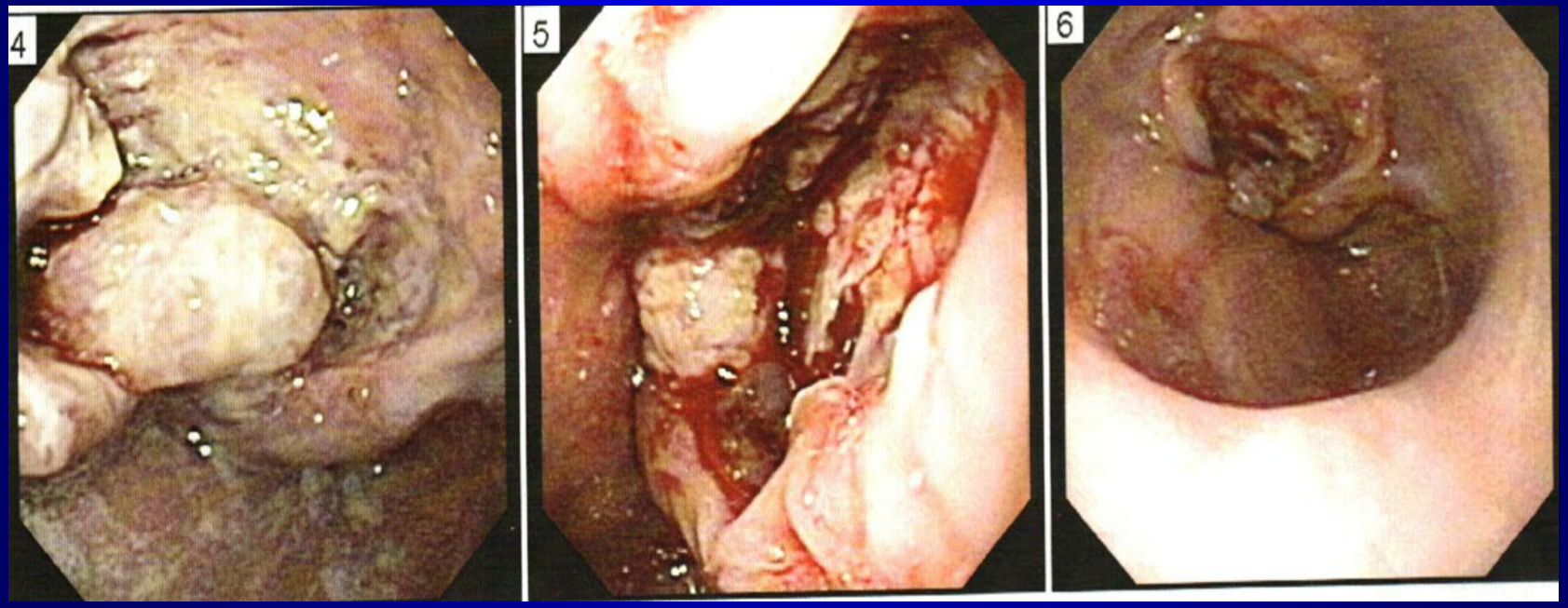






AGA Medical Position Statement. Gastroenterology 2011;140:1084

Adenocarcinoma of the Esophagus

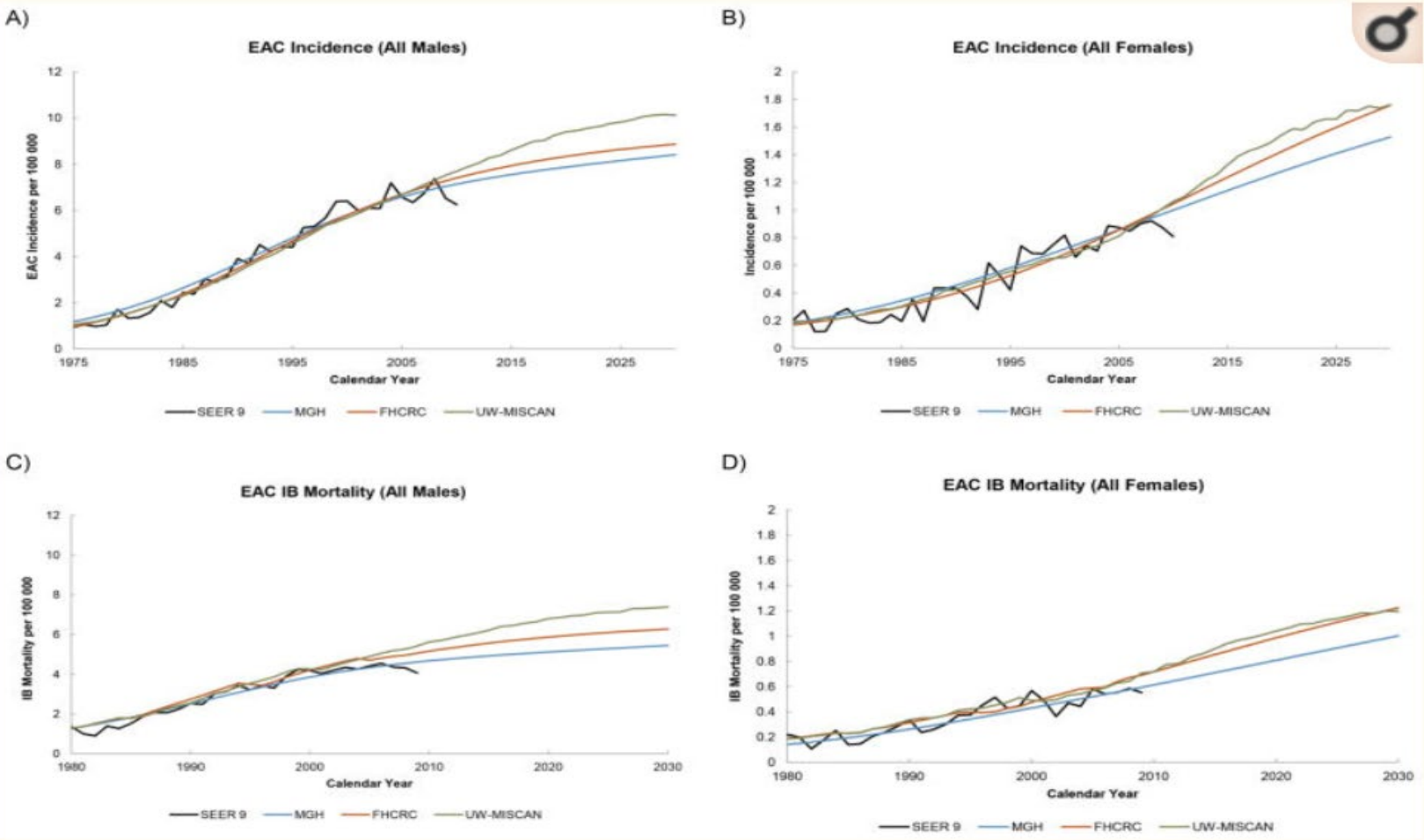


Known Risk Factors for the Development of Neoplasia in BE Patients

- Advance age
- Increasing length of BE
- Central obesity
- Tobacco usage
- Lack of nonsteroidal anti-infammatory agent use
- Lack of PPI use
- Lack of statin use.

Shaheen N Am J Gastroenterol 2015; 2016; 111:30–50.

Trend in Esophageal Adenocarcinoma Incidence and Mortality Using Comparative Simulation Modeling



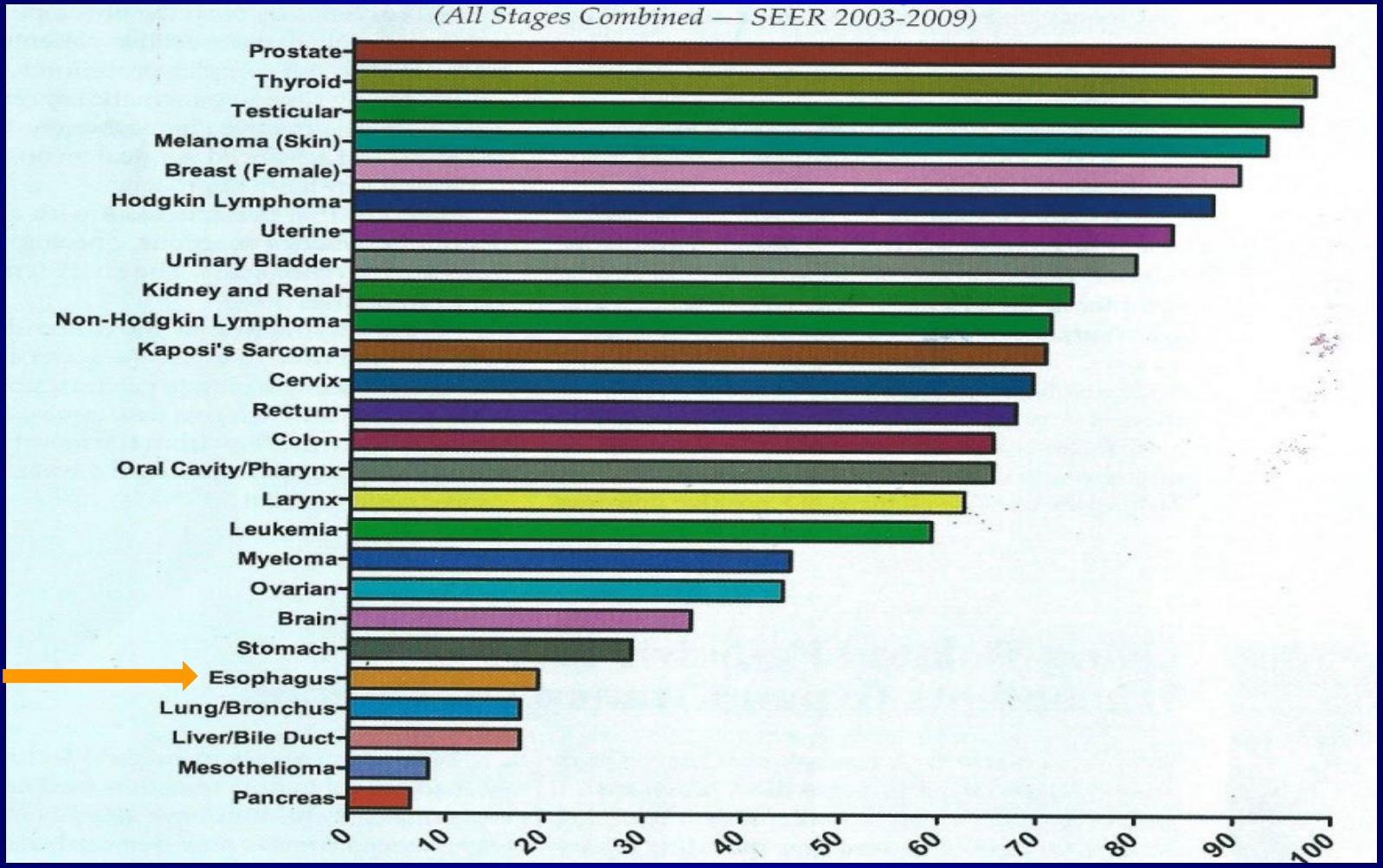
Kong CY et al. Cancer Epidemiol Biomarkers Prev. 2014 Jun; 23(6): 997–1006

Cancer Risk for Patients with Barrett's Esophagus

- **No dysplasia 0.15% per year**
- **Low-grade dysplasia: 1% per year**
- **High grade dysplasia: 6-8% per year**

Rastogi . Gastrointest Endosc 2008;67:394.
Spechler. Am J Gastroenterol 2005;100:927.
AGA Medical Position Statement. Gastroenterology 2011;140:1084.

Percentage of Patients Surviving 5 – Years



BE - Diagnosis

- The finding of intestinal metaplasia (IM) in the tubular esophagus
- Columnar mucosa of at least 1 cm in length is necessary for a diagnosis of BE,
- a. Patients with a normal-appearing Z line should not undergo routine endoscopic biopsies.
- b. In the absence of any visible lesions, patients with a Z line demonstrating <1 cm of proximal displacement from the top of the gastric folds should not undergo routine endoscopic biopsies

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BE - Diagnosis

- At least 8 endoscopic biopsies need to be obtained in screening examinations with endoscopic findings consistent with possible BE, with the Seattle protocol followed for segments of longer than 4 cm
  - Circumference – 4
  - Tongue - 1

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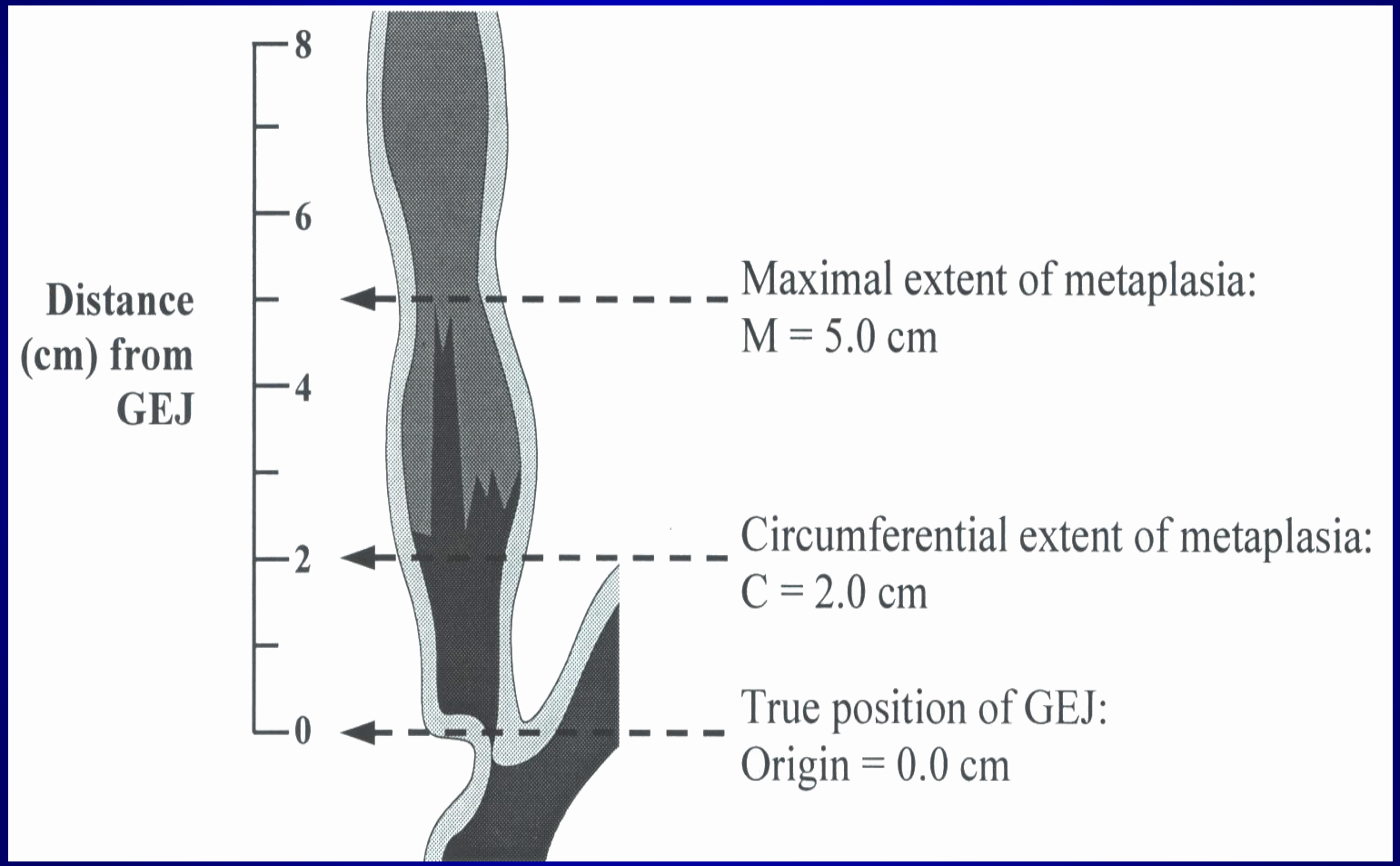
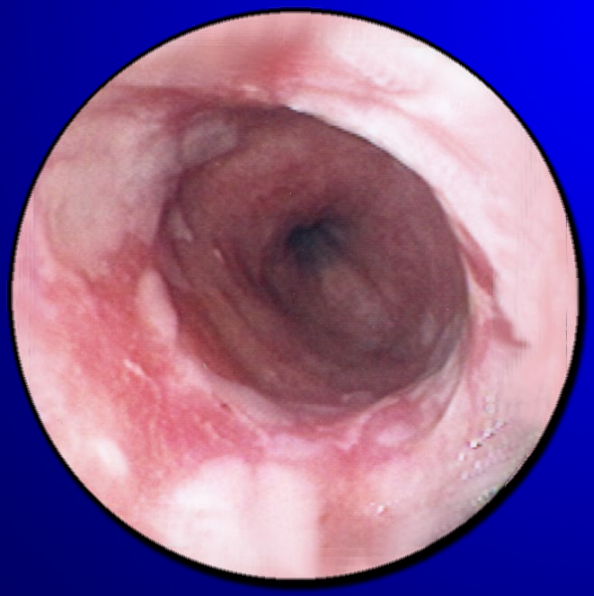
The C & M Prague Classification



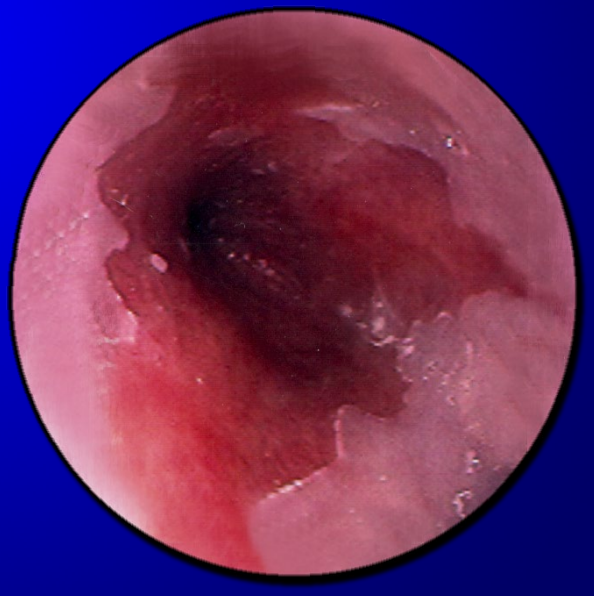
Sharma P et al. Gastroenterology. 2006 Nov;131(5):1392-9

Advance Grading of Erosive Esophagitis May Mask BE

- Erosive esophagitis can obscure metaplasia
- Healing with PPI therapy is necessary prior biopsy



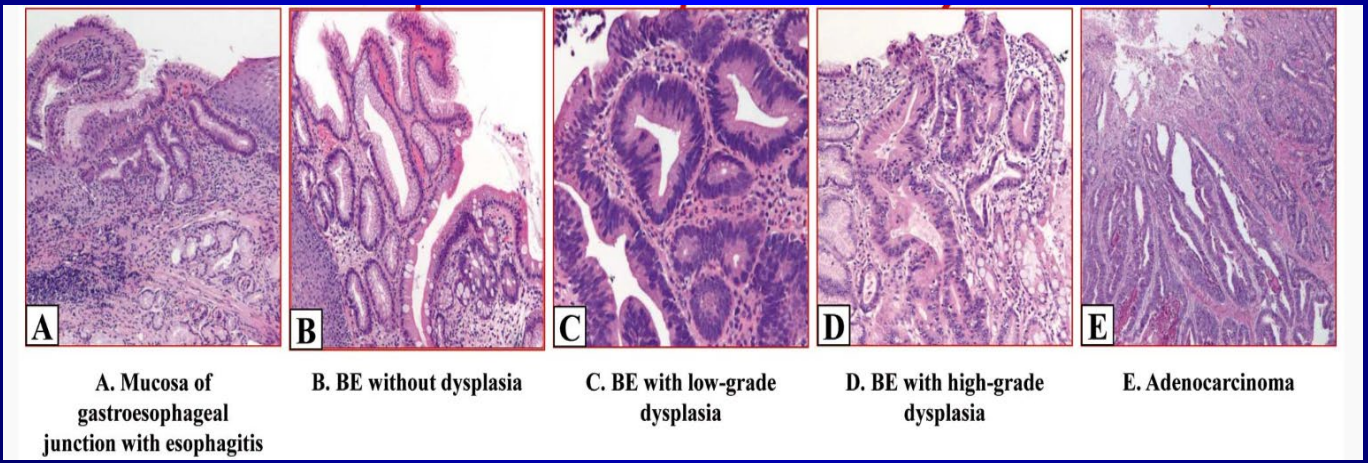
Pre-Therapy



Post-Therapy

BE Diagnosis

Dysplasia of any grade detected on biopsies of BE need to be confirmed by a second pathologist with expertise in gastrointestinal (GI) pathology



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Known Risk Factors for BE

- Weekly (>5 years) GERD symptoms
- Advance age (>50 years)
- Male gender
- Tobacco usage
- Central obesity
- Caucasian race
- First-degree relatives with known BE.

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BE - Screening

- A single screening endoscopy is needed for patients with chronic GERD symptoms and 3 or more additional risk factors for BE
- A swallowable, non-endoscopic capsule device combined with a biomarker is an acceptable alternative to endoscopy for screening for BE
- There is no need to repeat screening in patients who have undergone an initial negative screening examination by endoscopy

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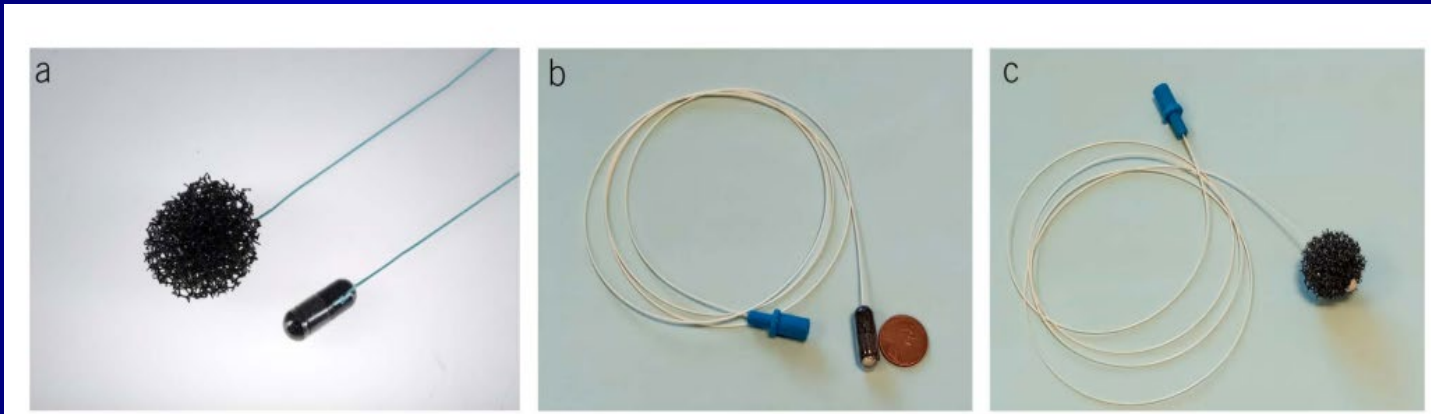
Non-endoscopic BE Detection Devices

Encapsulated and expanded Cytosponge device.

Encapsulated and expanded EsophaCap device



Retracted and inflated Esocheck device

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Summary of Performance Characteristics of Minimally Invasive Non-endoscopic Swallowable Cell Collection Devices Combined With Biomarkers for the Non-endoscopic Detection of BE

Table 4. Summary of performance characteristics of minimally invasive nonendoscopic swallowable cell collection devices combined with biomarkers for the nonendoscopic detection of BE

Device Biomarker used Country of origin	Design Sample size	Sensitivity (%)	Specificity (%)
30-mm capsule sponge (Cytosponge) (226) TFF3 United Kingdom	Case-control Cases: 647 Controls: 463	80[a]	92
30-mm capsule sponge (Medtronic) (227) TFF3 United States	Case-control Cases: 129 Controls: 62	76	77
25-mm capsule sponge (EsophaCap) (228) MDMs United States	Case-control Cases: 112 Controls: 89	92	94
25-mm capsule sponge (EsophaCap) (229) MDMs United States	Case-control Training set: cases 110, controls 89 Test set: cases 60, controls 29	93	93
18-mm swallowable and inflatable balloon (EsoChek) (230) MDMs United States	Case-control Cases: 50 Controls: 36	92	88
20-mm capsule sponge (EsophaCap) (231) MDMs United States	Case-control Training set: cases 18, controls 34 Test set: cases 14, controls 14	94	62

BE, Barrett's esophagus; MDM, methylated DNA marker; TFF3, trefoil factor 3.
[a]BE defined as >2 cm segment length.

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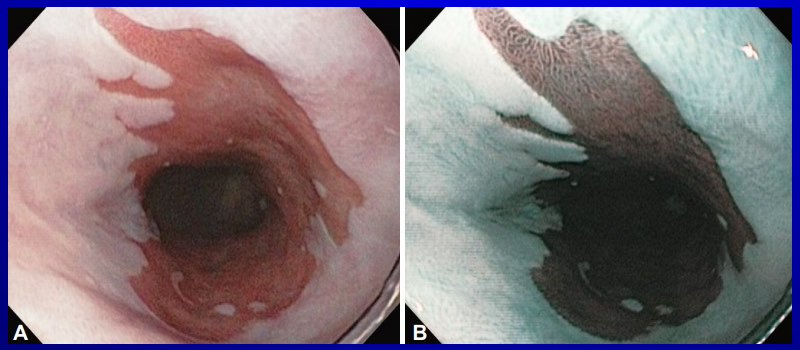
BE - Surveillance

- Both white light endoscopy and chromoendoscopy are recommended in patients undergoing endoscopic surveillance of BE

- Narrow band imaging targeted biopsies compared with standard biopsy protocols had a pooled sensitivity of
- 94.2% (95% CI 83%–98%) and specificity of 94.4% (95% CI
- 81%–99%) for the detection of dysplasia or EAC



Espino A, Clin Endosc 2014;47:47-54 Committee AT et al, Gastrointest Endosc 2016;83:684–98
Shaheen NJ et al. Am J Gastroenterol. 2022 Apr 1;117(4):559-587.

BE - Surveillance

- We recommend a structured biopsy protocol be applied to minimize detection bias in patients undergoing endoscopic surveillance of BE

- The Seattle protocol includes careful visual inspection of the Barrett's segment with biopsies of any endoscopically visible lesions, followed by 4 quadrant biopsies at intervals #2 cm from the level of the lower esophageal sphincter to the squamocolumnar junction

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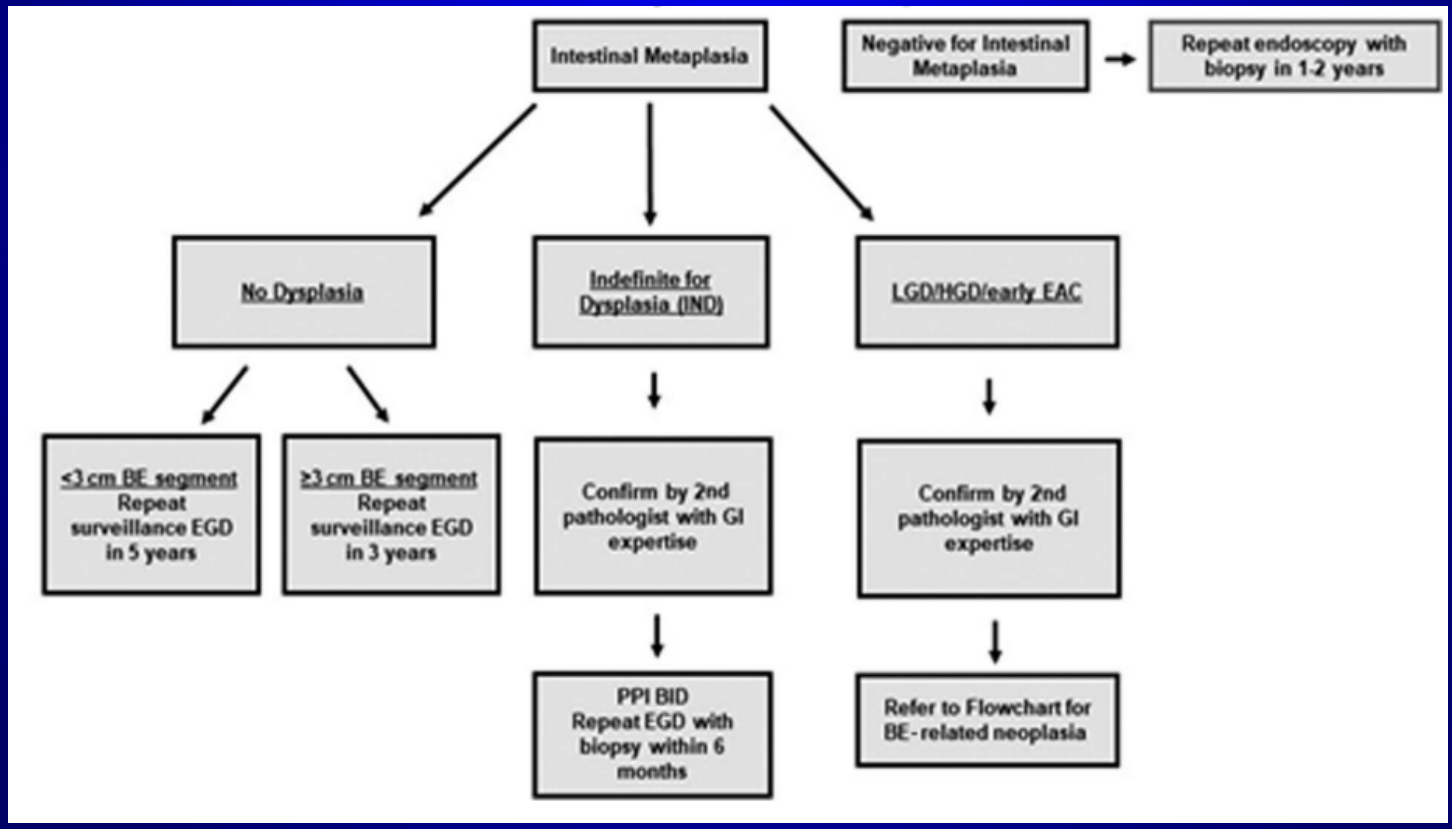
- Endoscopic surveillance need to be performed in patients with BE at intervals dictated by the degree of dysplasia noted on previous biopsies
- The length of BE segment need to be considered when assigning surveillance intervals with longer intervals reserved for those with BE segments of < 3 cm



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BE – Medical Treatment

- Once-a-day PPI therapy should be considered in patients with BE without allergy or other contraindication to PPI use
- No support for combination of aspirin and PPI
- Against anti-reflux surgery

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BE – Endoscopic Treatment

- Endoscopic eradication therapy is recommended in patients with BE with HGD or IMC
- Endoscopic eradication therapy is recommended in patients with BE with LGD to reduce the risk of progression to HGD or EAC vs close endoscopic surveillance
- Initial endoscopic resection is recommended of any visible lesions before the application of ablative therapy in patients with BE undergoing endoscopic eradication therapy.
- Patients with BE undergoing endoscopic eradication therapy need to be treated in high-volume centers
- Endoscopic surveillance program is recommended in patients with BE who have completed successful endoscopic eradication therapy

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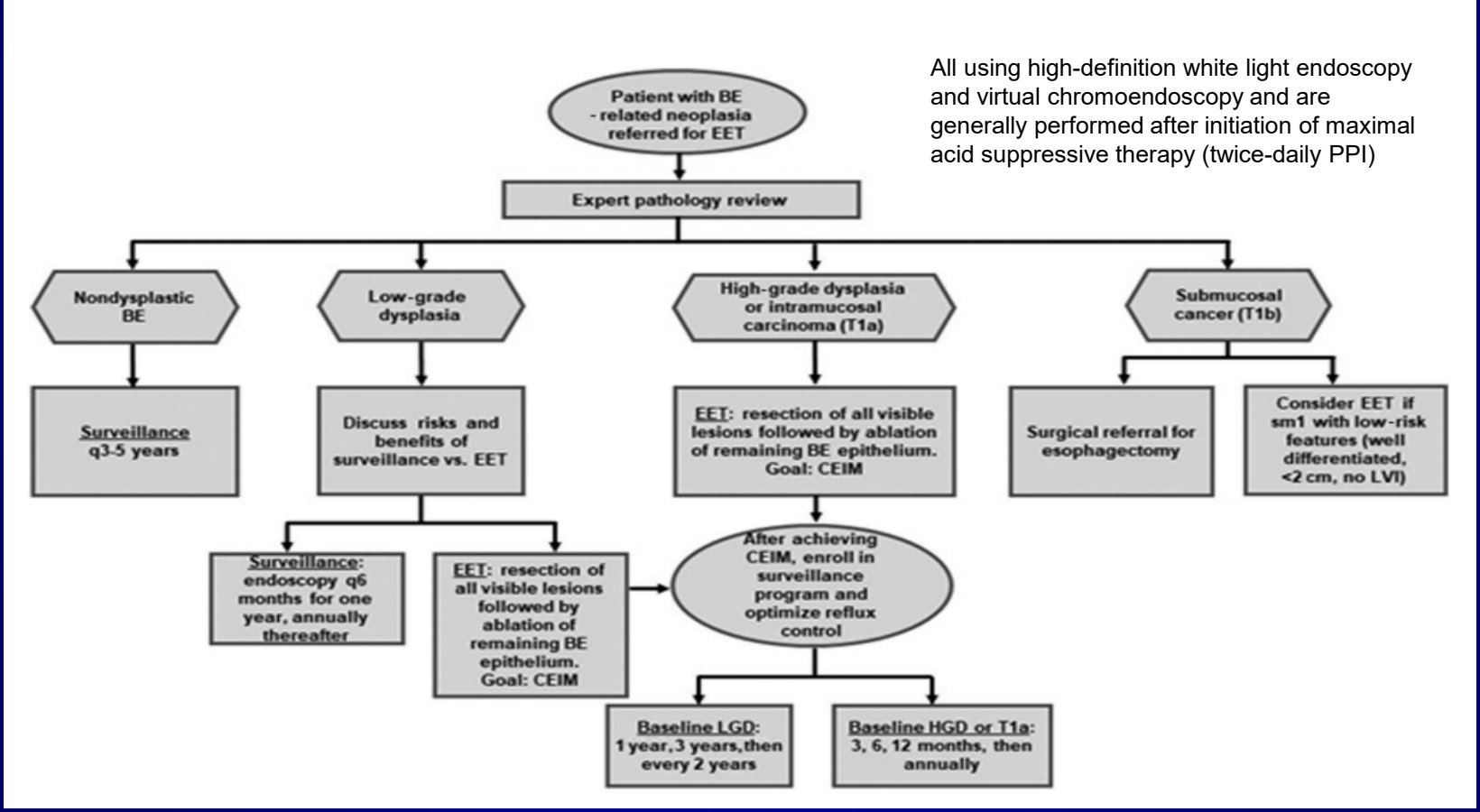
Algorithm for Patients Referred for Consideration of Endoscopic Eradication Therapy



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Recommended Endoscopic Surveillance Intervals Following CEIM Based on Worst Pretreatment Histology

Table 7. Recommended endoscopic surveillance intervals following CEIM based on worst pretreatment histology

Worst pretreatment histology	Suggested endoscopic surveillance
Low-grade dysplasia	1 yr following CEIM 3 yr following CEIM Every 2 yr thereafter
High-grade dysplasia	3 mo following CEIM 6 mo following CEIM 12 mo following CEIM Annually thereafter
Intramucosal carcinoma	3 mo following CEIM 6 mo following CEIM 12 mo following CEIM Annually thereafter

CEIM, complete eradication of intestinal metaplasia.

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Ablation Modalities

- Endoscopic ablative therapies use thermal, photochemical, or radiofrequency energy
- Contact method: Radiofrequency ablation (RFA).
- Noncontact methods: Argon plasma coagulation (APC) and cryoablation (preferred in patients with tortuous esophagus or stricture) and Photodynamic therapy (not commonly used)

Comparison of the Efficacy and Complication Rate of Various Endoscopic Ablative Techniques

Technique	Efficacy	Complication rate
Radiofrequency ablation	CE-D: 92%-98%[15,16]	Strictures: 5%-6%[26]
	CE-IM: 88%-91%[15,16]	Chest pain: 3.8%
		Bleeding: 1%
Cryotherapy	CE-D: 95%[30,33]	Strictures: 3%-13%[33,34]
	CE-IM: 88%[30,33]	Bleeding: 2%
Argon plasma coagulation	CE-IM: 58%-78%[38,40]	Stricture: 4%[40,47]
		Bleeding: 4%
		Perforation: 2%
Photodynamic therapy	CE-D: 80%[50,51]	Photosensitivity: 69%[57]
	CE-IM: 43%-53%[50,51]	Stricture: 36%[58]

CE-D: Complete eradication of dysplasia; CE-IM: Complete eradication of intestinal metaplasia.

Singh T et al. World J Gastrointest Endosc 2018; 10(9): 165-174

Thank You!

The MHMC Esophageal Research Group