Digestive Endoscopy 2020; **32**: 168–179 doi: 10.1111/den.13530

Special Report

Principles and practice to facilitate complete photodocumentation of the upper gastrointestinal tract: World Endoscopy Organization position statement

Fabian Emura,[1,2,3] Prateek Sharma,[4,5] Vitor Arantes,[6,7] Cecilio Cerisoli,[8] Adolfo Parra-Blanco,[9] Kazuki Sumiyama,[10] Raul Araya,[14] Sergio Sobrino,[16] Philip Chiu,[17] Koji Matsuda,[12] Robinson Gonzalez,[15] Mitsuhiro Fujishiro[13] and Hisao Tajiri[11]

[1]*Advanced Gastrointestinal Endoscopy, EmuraCenter LatinoAmerica,* [2]*Division of Gastroenterology, La Sabana University,* [3]*Emura Foundation for the Promotion of Cancer Research, Bogotá D.C, Colombia,* [4]*Veterans Affairs Medical Center,* [5]*University of Kansas School of Medicine, Kansas City, USA,* [6]*Endoscopy Division, Hospital das Clínicas e Mater Dei Contorno,* [7]*Alfa Institute of Gastroenterology, Medical School, Federal Univetsity of MInas Gerais, Belo Horizonte, Brazil,* [8]*Gedyt, Gastroenterology and Diagnostic and Therapeutic Endoscopy, Buenos Aires, Argentina,* [9]*NIHR Nottingham Biomedical Research Centre, Department of Gastroenterology, Nottingham University Hospitals NHS Trust and University of Nottingham, Nottingham, UK,* [10]*Department of Endoscopy,* [11]*Department of Innovative Interventional Endoscopy Research, The Jikei University School of Medicine, Tokyo,* [12]*Division of Gastroenterology, St. Marianna University, Kanagawa, Tokyo,* [13]*Department of Gastroenterology & Hepatology, Nagoya University Graduate School of Medicine, Aichi, Japan,* [14]*Clinic Los Andes University, Division of Gastroenterology and Endoscopy, Army Hospital of Santiago,* [15]*Medical School, Pontificia Catholic University, Santiago, Chile,* [16]*Angeles del Pedregal Hosptial, Mexico City, Mexico and* [17]*Division of Upper GI & Metabolic Surgery, Department of Surgery, The Chinese University of Hong Kong, Hong Kong*

Although esophagogastroduodenoscopy (EGD) is the most commonly used procedure in the gastrointestinal (GI) tract, the method of esophageal, gastric and duodenal mucosa photodocumentation varies considerably worldwide. One probable explanation is that for generations, EGD has primarily been taught by GI faculty and instructors based on their perceptions and experience, which has resulted in EGD being a non-standardized procedure. Currently, the procedure is facing a challenging scenario as endoscopy societies are implementing procedure-associated quality indicators aiming for best practice among practitioners and evidence-based care for patients. Contrary to colonoscopy where cecum landmarks photodocumentation is considered proof of completeness, there are currently no reliable performance measures to gauge the completeness of an upper endoscopy nor guidance for complete photodocumentation. This World Endoscopy Organization (WEO) position statement aims to provide practical guidance to practitioners to carry out complete EGD photodocumentation. Hence, an international group of experts from the WEO Upper GI Cancer Committee formulated the following document using the body of evidence established through literature reviews, expert opinions, and other scientific sources. The group acknowledged that although the procedure should be feasible in any facility, what is needed to achieve a global shift on the concept of completeness is a common written statement of agreement on its potential impact and added value. This best practice statement offers endoscopists principles and practical guidance in order to carry out complete photodocumentation from the hypopharynx to the second duodenal portion.

Key words: complete examination, landmark, photodocumentation, systematic alphanumeric coded endoscopy

INTRODUCTION

ALTHOUGH ESOPHAGOGASTRODUODENOSCOPY (EGD) is the most commonly used procedure in the gastrointestinal (GI) tract, the method of esophageal, gastric and duodenal mucosa photodocumentation varies considerably worldwide.[1] One probable explanation is that for generations, EGD has primarily been taught by GI faculty and instructors based on their perceptions and experience, which has resulted in EGD currently considered a non-standardized procedure.[2,3] EGD is currently facing a challenging scenario, as endoscopy societies are implementing procedure-associated quality indicators to promote best practice among practitioners and to provide evidence-based

Corresponding: Fabian Emura, Advanced Gastrointestinal Endoscopy, EmuraCenter LatinoAmerica, Calle 134 No. 7-83. Consultorio 341, Edificio Altos del Bosque, Bogotá D.C., Colombia. Email: fabian.emura@unisabana.edu.co
Received 20 June 2019; accepted 11 September 2019.
[Correction added on 21 November 2019, after first online publication: "Emura Center" has been corrected to "EmuraCenter" in Affiliation 1.]

care for patients. Although a complete exam is a determining indicator of quality during EGD, there are currently no reliable performance measures to gauge the completeness of an upper endoscopy examination.[4,5] This limitation could be partly responsible for the low incidence of detection of early gastric cancer in some countries that have a high incidence of the disease, and also for the high rate of missed cancers in endoscopic procedures carried out up to 3 years before diagnosis.[6,7]

Recently, photodocumentation has emerged as a useful tool to measure quality in endoscopy, and photography of cecum landmarks as an indicator of completeness in colonoscopy.[8] In this regard, the European Society of Gastrointestinal Endoscopy (ESGE) has stated that photodocumentation of all anatomical landmarks during upper GI endoscopy can be considered an indicator of a complete examination.[4] Based on this consideration and both principles of endoluminal anatomy and recognized landmarks, a total of 28 unique endoluminal areas comprising the whole inner lining of the upper GI tract, from the hypopharynx to the second portion of the duodenum, have been described.[3,9] Photographic registry of this mucosal framework constitutes the basis to achieve complete photodocumentation. This sequential overlapped registry may, therefore, represent a robust indicator of completeness.[3] A practical guide, however, to thoroughly photodocument this mucosal framework has never been reported.

This WEO position statement aims to provide practical guidance to practitioners to carry out complete photodocumentation during EGD. Hence, an international group of experts appointed by the Chair of the WEO Upper GI Cancer Committee (M.F.) and lead by two of the authors (F.E. and P.S.) met in May 2019 and formulated the following document using the body of evidence established through literature reviews, expert opinions, and other scientific sources. The group acknowledged that although complete photodocumentation should be feasible in any facility, what is needed to achieve a global shift on the concept of completeness is a common written statement of agreement on its potential impact and added value. Their conclusions form the basis of this practice statement which aims to offer endoscopists principles and practical guidance with which to carry out a complete examination from the hypopharynx to the second duodenal portion.

RATIONALE AND PRINCIPLES OF ENDOSCOPIC ANATOMY

Hypopharynx

THE HYPOPHARYNX ACCOUNTS for 72–87% of early oropharyngeal and hypopharyngeal cancers.[10] Although the term EGD implies that the procedure starts at the superior esophageal sphincter, both the oropharynx and hypopharynx constitute the initial portion of the upper GI tract. Anatomically, it is composed of the pyriform sinuses, the posterior pharyngeal wall, and the postcricoid area, that harbor 78%, 14%, and 8% of lesions, respectively.[11]

Esophagus

Esophageal cancer is one of the most aggressive tumors and is the sixth leading cause of cancer death worldwide.[12] Squamous cell carcinoma incidence is high in Asia, Africa, and the Middle East. Meanwhile, the incidence of Barrett's adenocarcinoma is increasing in Europe and the USA, making esophageal cancer a worldwide disease.[13] Esophageal photodocumentation is achieved by recognition of endoluminal landmarks located at the anterior esophageal wall. The left main bronchus and the left atrium landmarks have been reported at 25.8 cm (SD 2.3) and 31.4 cm (SD 2.4) from the incisors, respectively.[14] When taken together, along with cricopharyngeal narrowing and esophagogastric junction (EGJ) landmarks, the esophagus can be divided into three sections: upper third, between the cricopharyngeal narrowing and the left main bronchus; middle third, between the left main bronchus and the left atrium; and the distal third, extending from the left atrium down to the EGJ. Appropriate recognition of these landmarks also facilitates radial orientation in any esophageal portion, including the EGJ.[13]

Esophagogastric junction

For endoluminal orientation, either the top of the gastric folds or the distal end of the lower esophageal palisade vessels where veins merge with the submucosal venous system is used to define the EGJ.[14] Correct identification of the four quadrants in direct view is necessary for appropriate photodocumentation, lesion location, and surveillance.[15] Photodocumentation of the cardia in retroflex view is required to properly diagnose the location and extension of types II and III Siewert adenocarcinomas.[16]

Stomach

Over 1 000 000 new cases of gastric cancer were diagnosed in 2018 and it remains the fifth most frequently diagnosed cancer worldwide.[17] In addition to easily recognized landmarks such as the pyloric channel and the incisura angularis, there are other endoluminal landmarks that, once identified, are key in achieving a complete examination. These landmarks include the epithelial transition zone at the

greater curvature of the lower third; the gastric spur, an external compression at the posterior wall of the middle third; the fornix, the pocket-like upper part of the upper body; and the cardia, the opening forming the junction in retroflex view between the esophagus and the stomach.[2] Identification of these landmarks along with the anterior and posterior walls, the lesser and greater curvatures, and the stomach sections,[18] constitute the rationale to luminally divide the stomach into five large regions: the pyloric channel and the antrum; the lower, middle and upper thirds; and the lesser curvature, which in total comprise 21 different areas[2,3,9] (Table 1).

Duodenum

Periampullary tumors usually have a poor prognosis. Lesions amenable for endoscopic diagnosis are duodenal and ampullary adenomas or carcinomas that comprise 22% of all periampullary tumors.[19] Ampullary adenomas are usually treated by endoscopic resection, whereas surgery remains the standard of care for carcinomas. Although non-ampullary lesions are usually considered rare, the number of these tumors has recently increased in Japan.[20] Neuroendocrine tumors in the duodenal bulb invading the submucosal layer have occasionally been reported.[21] Adenomas and carcinomas are usually located at the second duodenal portion and, therefore, careful evaluation of this area is important, and is the last step of the examination.

Table 1 Endoluminal alphanumeric anatomy of the upper gastrointestinal tract

Region	Area	Numeric code
Pharynx	Hypopharynx	1
Esophagus	Upper third	2
	Middle third	3
	Lower third	4
	Esophagogastric junction	5
Antrum	Pyloric channel	6
	Anterior wall	7
	Lesser curvature	8
	Posterior wall	9
	Greater curvature	10
Gastric body, lower third	Anterior wall	11
	Lesser curvature	12
	Posterior wall	13
	Greater curvature	14
Gastric body, middle third	Anterior wall	15
	Lesser curvature	16
	Posterior wall	17
	Greater curvature	18
Gastric body, upper third	Greater curvature	19
	Anteroposterior wall	20
	Fornix	21
	Cardia	22
Lesser curvature	Upper third	23
	Middle third	24
	Lower third	25
	Incisura angularis	26
Duodenum	Duodenal bulb	27
	Duodenum, second portion	28

PRINCIPLES OF MUCOSAL PREPARATION

HIGH-QUALITY PHOTODOCUMENTATION OF the entire mucosal lining would not be possible without a cleansing protocol similar to bowel preparation before colonoscopy. Although the use of mucosal preparation for increasing early cancer detection is still unproven, this practice is considered safe even in sedated patients and results in better visualization; hence, increasing the likelihood of detecting lesions.[1] In Japan, a mixture of 20 000 U mucolytic agent Pronase (Kaken Pharmaceutical Co., Ltd, Tokyo, Japan), 80 mg anti-foaming agent dimethylpolysiloxane (Kissei Pharmaceutical Co., Ltd, Matsumoto, Japan) and 1 g Na+ bicarbonate diluted in 50 mL water have been used prior to the exam with demonstrated effectiveness.[22] As Pronase is not widely available in Western countries, a combination of 100–200 mg simethicone plus 500–600 mg *N*-acetylcysteine diluted in 100 mL water given 20 minutes before the exam significantly improved mucosal visibility of the esophagus, stomach and duodenum, when compared to water alone.[23,24]

SETTINGS AND PRINCIPLES OF ENDOSCOPIC PHOTOGRAPHY

ALTHOUGH THERE ARE various commercially available options of image-enhanced endoscopy, at present, examination under white light remains the standard approach. Regarding insufflation mode, all anatomical areas can be properly distinguished by using moderate insufflation; therefore, we recommend maintaining this degree of insufflation throughout the examination. Proper recognition of the left main bronchus and the left atrium landmarks in the esophagus has also been reported by using moderate insufflation.[15] For high-quality photodocumentation, images should be obtained free of saliva bubbles and debris. Additionally, freeze and capture buttons should be used to select required images for storage.[25] For appropriate image documentation, the subject, the leading characteristic around which the image is created, the composition, and the arrangement of visual elements as distinct from the subject,

need to be predetermined before image capture. A combination of close-up and panoramic views is essential to achieve a complete exam and to register the total mucosal lining.

Hypopharynx

Once the scope passes the epiglottis, the hypopharynx is examined. Appropriate photodocumentation can be achieved in both sedated and non-sedated patients. In non-sedated patients, the gag reflex can be attenuated by topical lidocaine spray. A minimal adequate image includes the posterior wall, both pyriform sinuses, and the larynx, area 1 (Fig. 1). In high-risk patients, examination of the postcricoid area could be facilitated by patient vocalization and the Valsalva maneuver.[26]

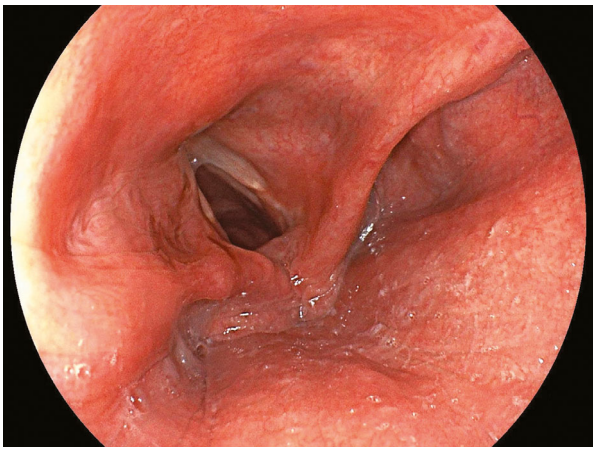

Figure 1 Photodocumentation of the hypopharynx. Structures seen in the hypopharynx are the posterior wall, both pyriform sinuses, and the larynx. Air inspiration facilitates vocal cord abduction and unobstructed observation.

Esophagus

In the esophagus, the upper third is examined by positioning the scope at the natural axis, where the left main bronchus is oriented at 9–12 o'clock, area 2. A satisfactory image of the upper third captures the left main bronchus as the distal reference. The middle third is evaluated by maintaining the same axis and capturing the left atrium landmark as the distal reference, area 3. The endoscope is then advanced distally maintaining the same orientation, and the lower third is captured after passing the left atrium landmark with the EGJ frequently used as the distal reference, area 4 (Fig. 2).

Esophagogastric junction

Correct identification of the anterior and posterior quadrants is achieved by maintaining the esophageal axis once the left atrium landmark at 9–12 o'clock is identified. The left and right quadrants can be recognized by pouring 3–4 mL water through the working channel of the scope which identifies the left quadrant by gravity.[15] Appropriate

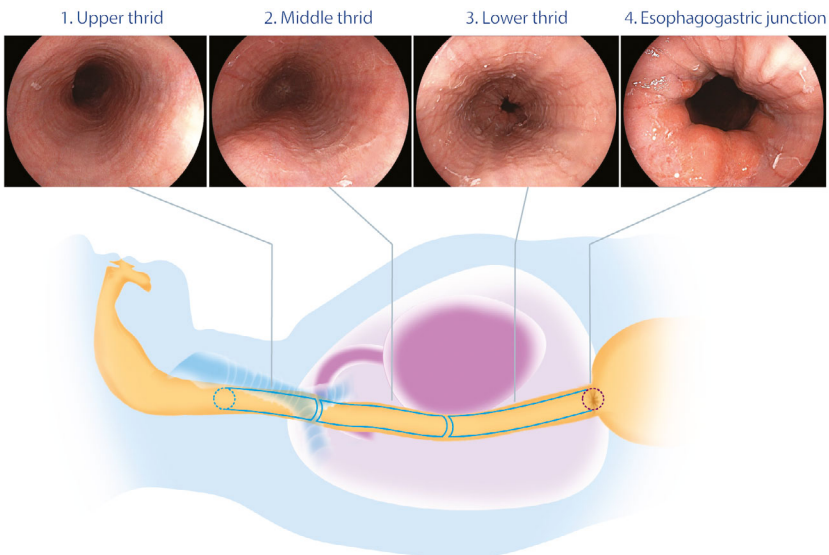

Figure 2 Endoscopic divisions of the esophagus. The upper third, from the cricopharyngeus to the left main bronchus; the middle third, from the left main bronchus to the left atrium; the lower third, from the left atrium to the esophagogastric junction.

EGJ photodocumentation includes a view of the four quadrants with the anterior wall radially oriented at 9–12 o'clock, area 5. If a lesion is observed, a clock-face distribution can be used to facilitate precise lesion location (Fig. 3).

Stomach

The scope enters the gastric lumen right in front of the greater curvature of the middle stomach. If residual water post-mucosal preparation is encountered, gentle suction in the retroflex view and parallel to the greater curvature is recommended to avoid mucosal bleeding.

Pyloric channel and gastric antrum

Inside the lumen, the scope is moved towards the antrum. An adequate pyloric channel image locates the pylorus at the center of the endoscopic field with, at most, 2 cm of surrounding mucosa, area 6. The scope is then gently pulled back and close-up documentation of the antrum is achieved by clockwise rotation: anterior wall with the pylorus at 3 o'clock, area 7; lesser curvature with the pylorus at 6 o'clock, area 8; posterior wall with the pylorus at 9 o'clock, area 9; and greater curvature with the pylorus at 12 o'clock, area 10 (Fig. 4).

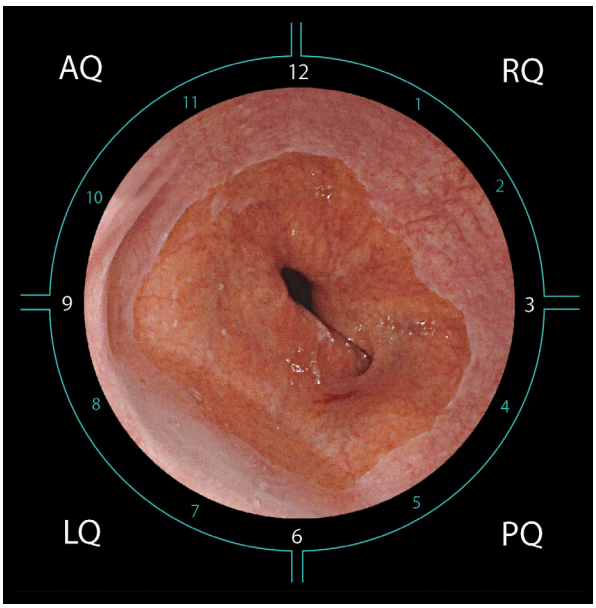

Figure 3 Quadrant identification at the esophagogastric junction. After pouring 3–4 mL water into the esophageal lumen and using gravity, the pooled liquid identifies the left quadrant (LQ) of the circumference. By positioning the left quadrant between 6 and 9 o'clock, the other three quadrants are identified as follows: anterior quadrant (AQ), portion of the circumference between 9 and 12 o'clock; right quadrant (RQ), portion of the circumference contralateral to the left quadrant and located between 12 and 3 o'clock; and posterior quadrant (PQ): portion of the circumference contralateral to the anterior quadrant and located between 3 and 6 o'clock.

Lower third

After pulling back, the distal third is examined clockwise with four close-up images with the scope oriented at the gastric axis, where the greater curvature is positioned at the lower part of the endoscopic field: the anterior wall including the anterior aspect of the incisura angularis, area 11; lesser curvature, where deflation of air permits its capture more vertically oriented, area 12; posterior wall including the posterior aspect of the incisura angularis, area 13; and greater curvature where the epithelial transition zone is frequently seen, area 14 (Fig. 5).

Middle third

Following scope withdrawal and by maintaining the same axis, the middle third is examined clockwise as follows: anterior wall in panoramic view, without the incisura angularis, area 15; a close-up view of the lesser curvature, area 16; posterior wall in panoramic view where the gastric spur can be seen with low insufflation,[3] area 17; and, by moving the left hand down towards to the left hip of the examiner, the greater curvature is examined in panoramic view with enough insufflation to observe the gastric folds separated and horizontally distributed, area 18 (Fig. 6).

Upper third

By rotating the small wheel downwards, the greater curvature in its upper portion is observed in panoramic view, area 19. Subsequently, the endoscope is left-side inserted and, in the retroflection view, the anteroposterior wall is observed at the inverted axis when the retroflexed scope can be seen from 12 to 2 o'clock, area 20. Moving he scope backward, the fornix and part of the cardia, at the anterior and greater curvature sides are close-captured at the inverted axis, area 21. Subsquently, by moving the left hand towards the right shoulder, observation of the cardia is completed by close photodocumentation of its posterior and lesser curvature sides, area 22 (Fig. 7).

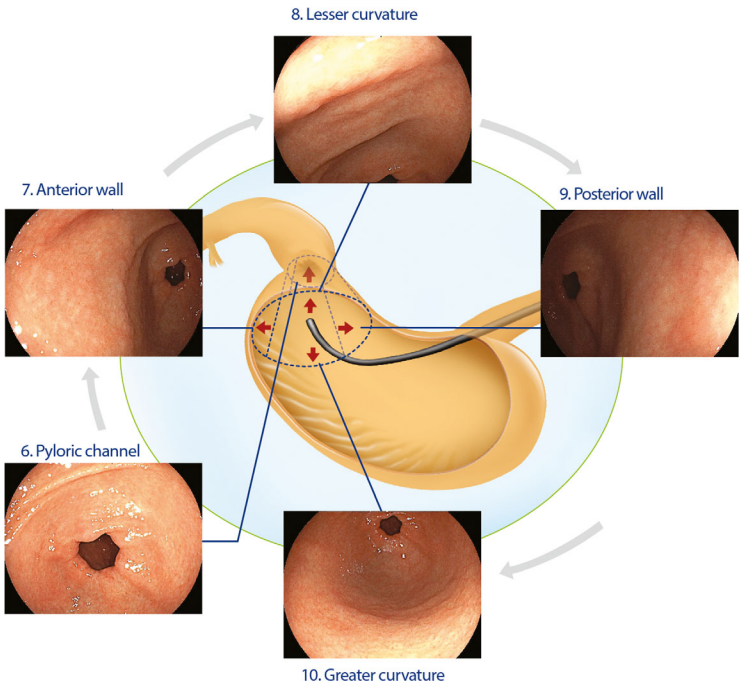

Figure 4 Practical guide for photodocumentation of the pyloric channel and the antrum. With the scope in direct view, the pyloric channel is close captured, area 6; then, the antrum is examined clockwise beginning at the anterior wall, area 7; the lesser curvature, area 8; the posterior wall, area 9, and the greater curvature, area 10.

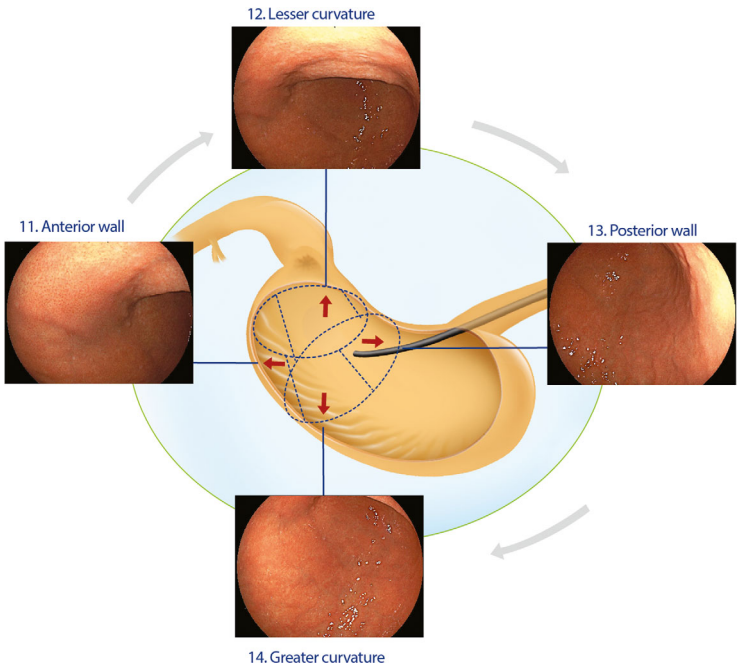

Figure 5 Practical guide for photodocumentation of the lower third of the gastric body. The scope is pulled back from the antrum to examine the anterior wall of the lower third, area 11; the lesser curvature, area 12; the posterior wall, area 13 and last, the greater curvature where the epithelial transition zone is frequently seen, area 14.

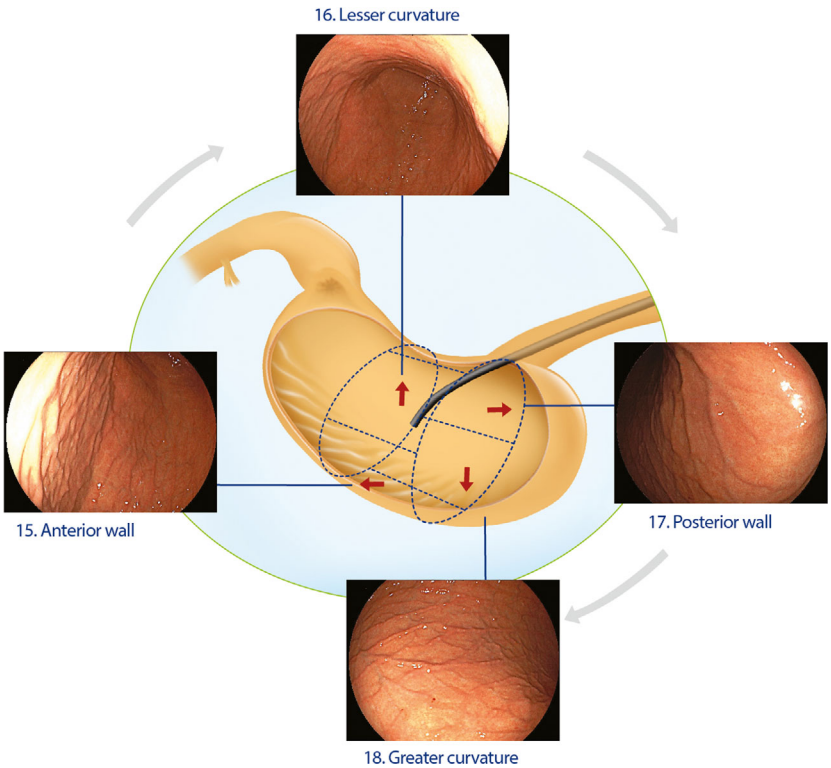

Figure 6 Practical guide to photodocumentation of the middle third of the gastric body. At the gastric axis, the anterior wall is first captured in panoramic view, area 15; then, the lesser curvature is close captured, area 16. Rotating clockwise, the posterior wall is captured in panoramic view, area 17. Last is the greater curvature where the gastric folds are captured horizontally, area number 18.

Lesser curvature

Continuing at the inverted axis and after returning the left hand to the neutral position, where the left hand is placed in supination at the level of the examiner's chest, the upper third of the lesser curvature is close-captured, with no more than 5 cm of gastric mucosa, area 23.[15] By maintaining the same axis and pulling back, the middle third, area 24, and the lower third, area 25, are consecutively observed in panoramic view. Finally, by slight deflation and rotating the small wheel clockwise, the whole incisura angularis is examined, area 26 (Fig. 8).

Duodenum

The endoscope is subsequently advanced through the pyloric channel to evaluate the duodenal bulb, area 27, and the second duodenal portion with Vater's ampulla usually located at the superior left quadrant, area 28 (Fig. 9).

DISCUSSION

THIS WEO POSITION statement constitutes a guide for complete photodocumentation of the upper GI mucosal lining, fulfilling the high-quality recommendations set by major endoscopy organizations regarding complete mucosal observation and appropriate documentation.[4,5] This examination, also known as systematic alphanumeric coded endoscopy (SACE), facilitates complete examination by photodocumenting 28 unique areas, from the hypopharynx to the second portion of the duodenum.[2,3,9] To achieve completeness, areas to be registered are numbered from 1 to 28 providing examiners the sequence of the procedure (Video S1).

Although there are no conclusive data to support that photodocumentation of all normal anatomical areas will improve diagnostic yield or improve patient outcomes, advantages of a complete photodocumentation cannot be overemphasized. It improves patient care by reducing the risk of missed lesions, protects endoscopists and patients concerning medicolegal concerns, constitutes a measurable quality parameter and is, in practice, superior to both Vater

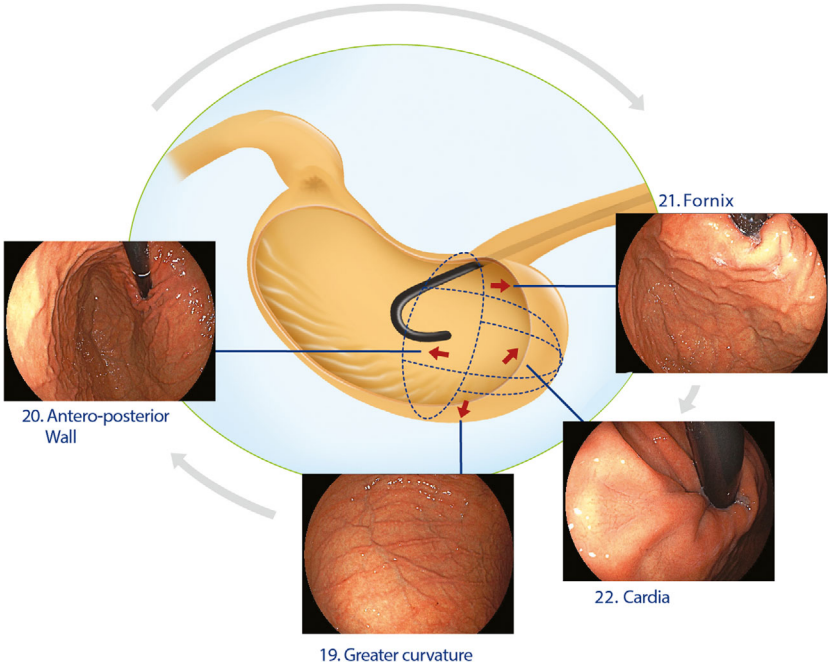

Figure 7 Practical guide for photodocumentation of the upper third of the gastric body. Using direct view, the greater curvature of the upper third is documented, area 19; Thereafter, the exam continues in retroflex view at the inverted axis, capturing the anterior and posterior walls of the upper third, area 20; then the fornix, area number 21. Last, the posterior and lesser curvature sides of the cardia are close captured, area 22.

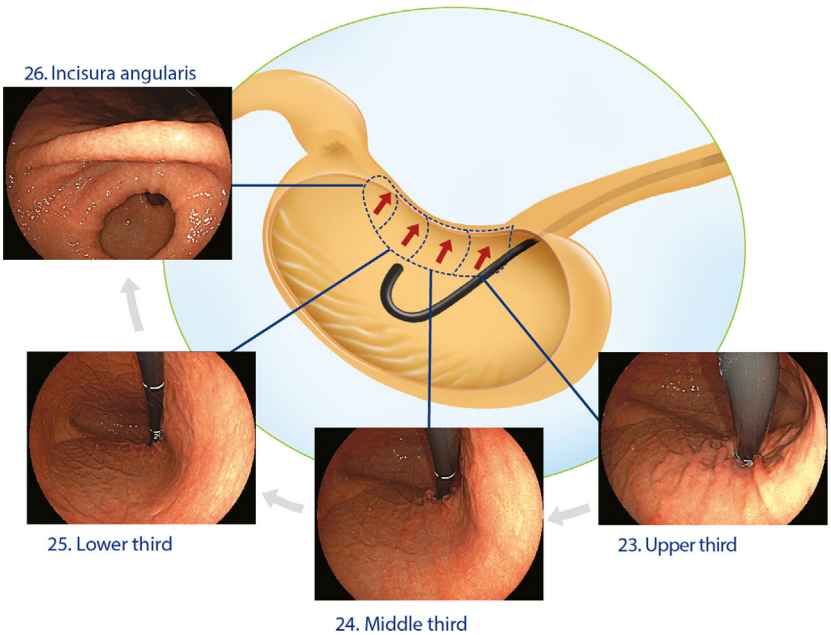

Figure 8 Practical guide for photodocumentation of the lesser curvature. In retroflex view and at the inverted axis, the lesser curvature is first examined with a close-up view of the upper third, area 23; then, the middle and lower thirds are captured in panoramic view, areas 24 and 25, respectively. Last, by rotating the small wheel clockwise, a view of entire incisura angularis is close-captured, area 26.

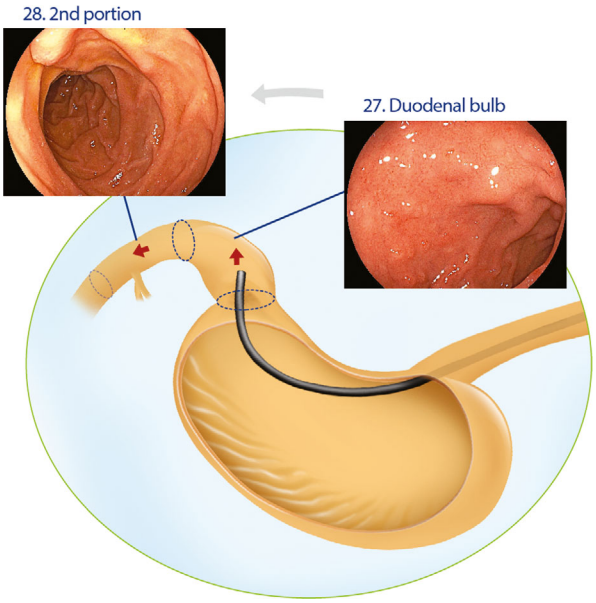

Figure 9 Practical guide for photodocumentation of the duodenum. The duodenal bulb is close captured usually with the lumen at the right inferior quadrant of the endoscopic field, area 27; finally, the 2nd duodenal portion is captured in panoramic view, with the Ampulla of Vater usually located at the superior left quadrant of the endoscopic field.

photography[4] and the 7-min cutoff time[27] previously referred to as indicators of completeness.

Some parts of the exam deserve additional consideration. Despite the current lack of guidelines, the hypopharynx was included in this statement as we believe that this examination adds significant value to the procedure and should be considered as an integral part of upper GI endoscopy, particularly in high-risk individuals.[10] Regarding the esophagus, the left main bronchus and the left atrium landmarks have provided compelling evidence to consider the esophagus as unequal throughout its course, and are useful to endoscopically differentiate the esophagus into upper, middle, and lower thirds. Even though photodocumentation of the EGJ has been previously recommended,[4,25] it is herein emphasized that radial orientation-based anatomy is crucial, not only for correct quadrant identification, but for location, treatment, and surveillance of lesions. In the stomach, the lesser curvature and the incisura angularis are identified as the most frequent location of gastric cancer in both Asian[28] and Western studies.[29,30] As these lesions are not always observed in direct view, this photodocumentation guide examines, not by chance, the upper third of the lesser curvature by a close-up retroflex view, and the middle and lower thirds of the lesser curvature twice, by direct view, areas 12 and 16, and by retroflex view, areas 24 and 25, respectively. Also, the incisura angularis is close-up examined in both the retroflex view, area 26, and in the direct view, when its anterior and posterior aspects are observed during photodocumentation of the anterior and posterior walls of the lower third of the gastric body, areas 11 and 13, respectively.

In Japan, systematic screening of the stomach (SSS) is an alternative method to exclusively screen the stomach with 22 images without documenting the EGJ and the pyloric channel.[31] The systematic exam herein described differs from the SSS proposal in its overlapped non-blind regions characteristics and its alphanumeric code system. Noteworthily, gastric SACE is, in practice, part of a complete system evaluation of the upper GI tract, which includes the pharynx, the esophagus, and the duodenum[3,8] (Fig. 10). The number of images recorded during an EGD is not standardized and in most facilities worldwide only a relatively small number of endoscopic images are stored for each examination. Although some Japanese referral centers recommend at least 40 non-alphanumeric stomach images,[1] the ESGE has recently increased from eight[32] to a 10-image study.[4] The above proposals, however, are quite different to a total upper tract mucosal photodocumentation and cannot be considered indicators of completeness.

It is important to overcome existing limitations before the widespread application of this exam. First, although including biopsy samples, systematic photodocumentation can be achieved in a reasonable time by an experienced endoscopist,[2] correct endoluminal orientation, nomenclature understanding, and a certain level of photographic skill are necessary for image documentation of this mucosal framework. As mucosal cleanliness is still not widely carried out, impaired visualization of the mucosa may constitute a limitation in achieving completeness. Also, adequate image capture demands proper training, often requiring appropriate handling of air and axis control, and can be influenced by patient movement and anatomical variations. Last, a barrier to image storage and picture analysis is the frequent incompatibility between endoscopic video processor systems and software image packages.

Although this WEO practice statement appears robust, a more detailed evaluation using chromoendoscopy or image-enhanced technologies may be necessary to properly screen high-risk hypopharyngeal, esophageal, gastric, and duodenal cancer patients. In our opinion, beyond the scope of risk-based cancer screening, this approach may

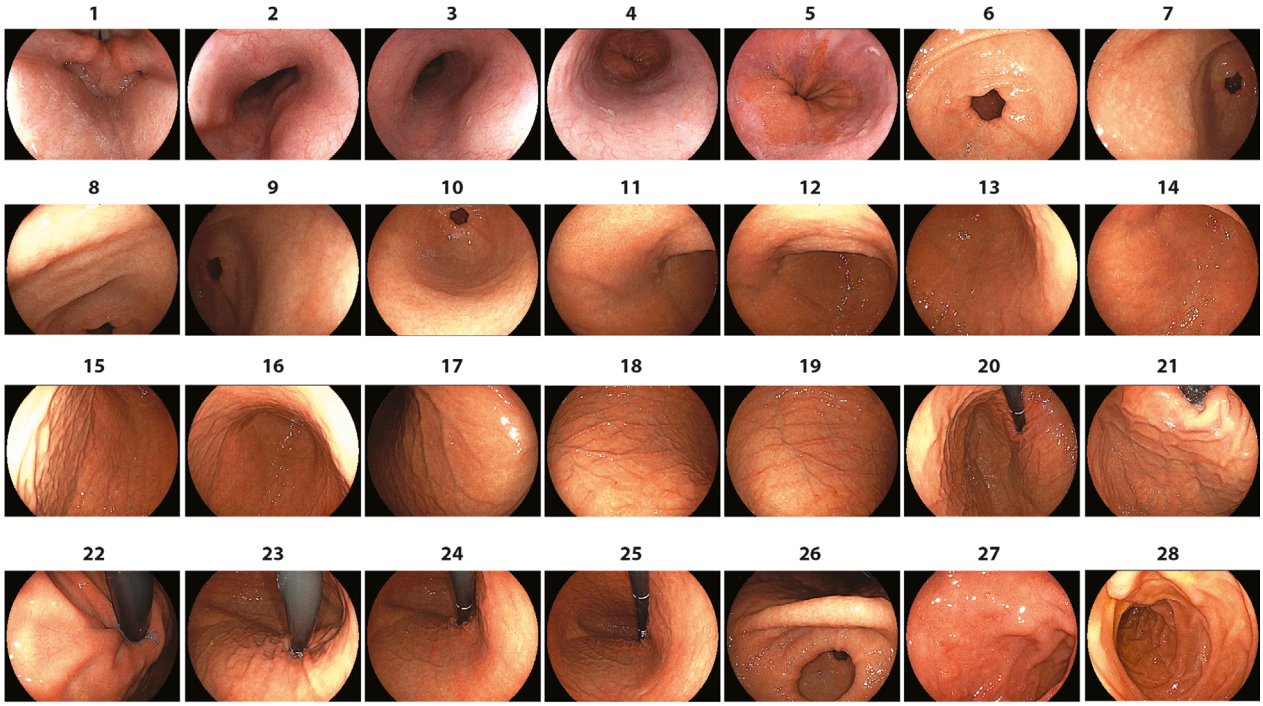

Figure 10 Reconstructed illustration of complete photodocumentation of the upper gastrointestinal tract. Comprising seven columns and four rows, this 28-image report allows easy identification and location of both benign and tumor lesions, and permits cross-examination, potentially reducing the bias of the performing endoscopist. 1, hypopharynx; 2, esophagus, upper third; 3, esophagus, middle third; 4, esophagus, lower third; 5, esophagogastric junction; 6, pyloric channel; 7, antrum, anterior wall; 8, antrum, lesser curvature; 9, antrum, posterior wall; 10, antrum, greater curvature; 11, lower third, anterior wall; 12, lower third, lesser curvature; 13, lower third, posterior wall; 14, lower third, greater curve; 15, middle third, anterior wall; 16, middle third, lesser curve; 17, middle third, posterior wall; 18, middle third, greater curvature; 19, upper third, greater curvature; 20, upper third, anteroposterior wall; 21, fornix; 22, cardia; 23, lesser curvature, upper third; 24, lesser curvature, middle third; 25, lesser curvature, lower third; 26, incisura angularis; 27, duodenal bulb; 28, duodenum, second portion.

be applied as a guide for completeness in all patients. Complete photodocumentation has been applied in Colombia since 2006[33] and, thereafter, in other Latin American countries with a high incidence of gastric cancer resulting in higher cancer detection rates.[9,34] Although randomized trials are needed to prove its effectiveness, at present, it provides a better definition of a complete procedure and should be ideally considered a quality improvement compared to previous non-standardized procedures.

In summary, based on the foundations of endoluminal anatomy and endoscopic photography, this WEO position statement provides the rationale with which to carry out complete photodocumentation fulfilling current unmet high-quality recommendations. Such a complete approach, if implemented worldwide, could significantly change the way we practice endoscopy and increase the diagnostic yield of upper GI examinations.

DISCLAIMER

THIS WEO POSITION statement represents a consensus on best practice based on the available evidence at the time of its preparation and may not apply in all situations. This Statement should be interpreted in light of specific clinical situations and resource availability.

ACKNOWLEDGMENT

THE AUTHORS WOULD like to thank Anne Shiwa for editing this manuscript.

CONFLICTS OF INTEREST

F.E. HAS RECEIVED research support from Fujifilm. Other authors declare no conflicts of interest for this article.

REFERENCES

1 Uedo N, Gotoda T, Yoshinaga S *et al*. Differences in routine esophagogastroduodenoscopy between Japanese and international facilities: a questionnaire survey. *Dig. Endosc.* 2016; **28** (Suppl 1): 16–24.
2 Emura F, Gralnek I, Sano Y *et al*. Improving early detection of gastric cancer: a novel systematic alphanumeric-coded endoscopic approach. *Rev. Gastroenterol. Peru* 2013; **33**: 52–8.
3 Emura F, Rodriguez-Reyes C, Giraldo-Cadavid L. Early gastric cancer: current limitations and what can be done to address them. *Am. J. Gastroenterol.* 2019; **114**: 841–5.
4 Bisschops R, Areia M, Coron E *et al*. Performance measures for upper gastrointestinal endoscopy: a European Society of Gastrointestinal Endoscopy (ESGE) Quality Improvement Initiative. *Endoscopy* 2016; **48**: 843–64.
5 Park WG, Shaheen NJ, Jonathan Cohen J *et al*. Quality indicators for EGD. *Gastrointest. Endosc.* 2015; **81**: 17–30.
6 Menon S, Trudgill N. How commonly is upper gastrointestinal cancer missed at endoscopy? A meta-analysis. *Endosc. Int. Open* 2014; **2**: E46–50.
7 Hosokawa O, Hattori M, Douden K *et al*. Difference in accuracy between gastroscopy and colonoscopy for detection of cancer. *Hepatogastroenterology* 2007; **54**: 442–4.
8 de Jonge V, Sint Nicolaas J, Cahen DL *et al*. Quality evaluation of colonoscopy reporting and colonoscopy performance in daily clinical practice. *Gastrointest. Endosc.* 2012; **75**: 98–106.
9 Machaca Quea NR, Emura F, Barreda Bolaños F *et al*. Effectiveness of systematic alphanumeric coded endoscopy for diagnosis of gastric intraepithelial neoplasia in a low socioeconomic population. *Endosc. Int. Open.* 2016; **4**: E1083–9.
10 Emura F, Baron TH, Gralnek IM. The pharynx: examination of an area too often ignored during upper endoscopy. *Gastrointest. Endosc.* 2013; **78**: 143–9.
11 Ugumori T, Muto M, Hayashi R *et al*. Prospective study of early detection of pharyngeal superficial carcinoma with the narrow-band imaging laryngoscope. *Head Neck* 2009; **31**: 189–94.
12 Domper Arnal MJ, Ferrández Arenas Á, Lanas Arbeloa Á. Esophageal cancer: risk factors, screening and endoscopic treatment in Western and Eastern countries. *World J. Gastroenterol.* 2015; **21**: 7933–43.
13 Schneider JL, Corley DA. The troublesome epidemiology of Barrett's esophagus and esophageal adenocarcinoma. *Gastrointest. Endosc. Clin. N. Am.* 2017; **27**: 353–64.
14 Ishimura N, Amano Y, Kinoshita Y. Endoscopic definition of esophagogastric junction for diagnosis of Barrett's esophagus: importance of systematic education and training. *Dig. Endosc.* 2009; **21**: 213–8.
15 Emura F, Gomez-Esquivel R, Rodriguez-Reyes C *et al*. Endoscopic identification of endoluminal esophageal landmarks for radial and longitudinal orientation and lesions location. *World J. Gastroenterol.* 2019; **25**: 498–508.
16 Siewert JR, Stein HJ. Carcinoma of the cardia: carcinoma of the gastroesophageal junction—classification, pathology and extent of resection. *Dis. Esophagus* 1996; **9**: 173–82.
17 Ferlay J, Colombet M, Soerjomataram I *et al*. Estimating the global cancer incidence and mortality in 2018: GLOBOCAN sources and methods. *Int. J. Cancer* 2019; **144**: 1941–53.
18 Japanese Gastric Cancer Association. Japanese classification of gastric carcinoma: 3rd English edition. *Gastric Cancer*. 2011; **14**: 101–12.
19 Hester CA, Dogeas E, Augustine M *et al*. Incidence and comparative outcomes of periampullary cancer: a population-based analysis demonstrating improved outcomes and increased use of adjuvant therapy from 2004 to 2012. *J. Surg. Oncol.* 2019; **119**: 303–17.
20 Goda K, Kikuchi D, Yamamoto Y *et al*. Endoscopic diagnosis of superficial non-ampullary duodenal epithelial tumors in Japan: multi center case series. *Dig. Endosc.* 2014; **26**(suppl 2): 23–9.
21 Otaki Y, Homma K, Nawata Y *et al*. Endoscopic mucosal resection with circumferential mucosal incision of duodenal carcinoid tumors. *World J. Gastrointest. Endosc.* 2013; **5**: 197–200.
22 Fujii T, Iishi H, Tatsuta M *et al*. Effectiveness of premedication with pronase for improving visibility during gastroendoscopy: a randomized controlled trial. *Gastrointest. Endosc.* 1998; **47**: 382–7.
23 Elvas L, Areia M, Brito D *et al*. Premedication with simethicone and N-acetylcysteine in improving visibility during upper endoscopy: a double-blind randomized trial. *Endoscopy* 2017; **49**: 139–45.
24 Monrroy H, Vargas JI, Glasinovic E *et al*. Use of N-acetylcysteine plus simethicone to improve mucosal visibility during upper GI endoscopy: a double-blind, randomized controlled trial. *Gastrointest. Endosc.* 2018; **87**: 986–93.
25 Tang SJ, Raju G. Endoscopic photography and image documentation. *Gastrointest. Endosc.* 2015; **82**: 925–31.
26 Hamada K, Ishihara R, Yamasaki Y *et al*. Transoral endoscopic examination of head and neck region. *Dig. Endosc.* 2018; **30**: 516–21.
27 Teh JL, Tan JR, Lau LJF *et al*. Longer examination time improves detection of gastric cancer during diagnostic upper gastrointestinal endoscopy. *Clin. Gastroenterol. Hepatol.* 2015; **13**: 480–7.e2.
28 Maruyama K, Gunvén P, Okabayashi K *et al*. Lymph node metastases of gastric cancer. General pattern in 1931 patients. *Ann. Surg.* 1989; **210**: 596–602.
29 Emura F, Mejía J, Donneys A *et al*. Therapeutic outcomes of endoscopic submucosal dissection of differentiated early gastric cancer in a Western endoscopy setting (with video). *Gastrointest. Endosc.* 2015; **82**: 804–11.
30 Cancer of the stomach. In: Mehta A, Bansal SC (eds). *Diagnosis and Management of Cancer*. New Delhi, India: Jaypeee Brothers Medical Publishers, 2004; 351–72.
31 Yao K. The endoscopic diagnosis of early gastric cancer. *Ann. Gastroenterol.* 2013; **26**: 11–22.
32 Rey JF, Lambert R; ESGE Quality Assurance Committee. ESGE recommendations for quality control in gastrointestinal

endoscopy: guidelines for image documentation in upper and lower GI endoscopy. *Endoscopy* 2001; **33**: 901–3.
33 Emura F, Mejía J, Mejía M *et al*. Effectiveness of systematic chromoendoscopy for diagnosis of early cancer and gastric premalignant lesions. Results of two consecutive screening campaigns in Colombia (2006–2007). *Rev. Col. Gastroenterol.* 2010; **25**: 19–30.
34 Pérez-Mendoza A, Zárate-Guzmán AM, Galvis García ES *et al*. Efficacy of narrow-band imaging for detecting intestinal metaplasia in adult patients with symptoms of dyspepsia. *Rev. Gastroenterol. México* 2018; **83**: 117–24.

SUPPORTING INFORMATION

ADDITIONAL SUPPORTING INFORMATION may be found in the online version of this article at the publisher's web site.

Video S1 Real-time practical guide for photodocumentation of the upper gastrointestinal tract. This non-edited video demonstrates complete sequential photodocumentation comprising 28 areas from the hypopharynx to the second duodenal portion.