

CLINICAL ASSESSMENTS IN

EOSINOPHILIC
ESOPHAGITIS
(EoE)



DYSPHAGIA SYMPTOM QUESTIONNAIRE (DSQ)

A PATIENT-REPORTED ASSESSMENT OF THE FREQUENCY AND SEVERITY OF DYSPHAGIA¹

The **DSQ** records symptoms of dysphagia and swallowing pain over the course of 24 hours based on patients' responses recorded daily through a 14-day period.

DSQ V4.0¹

QUESTION	RESPONSE OPTIONS	SCORE
1 Since you woke up this morning, did you eat solid food?	No	-
	Yes	-
2 Patients who answer "Yes" to Question 1 proceed to Question 2		
2 Since you woke up this morning, has food gone down slowly or been stuck in your throat?	No	0
	Yes	2
3 Patients who answer "Yes" to Questions 1 and 2 proceed to Question 3		
3 For the most difficult time you had swallowing food today (during the past 24 hours), did you have to do anything to make the food go down or to get relief?	No, it got better or cleared up on its own	0
	Yes, I had to drink liquid to get relief	1
	Yes, I had to cough and/or gag to get relief	2
	Yes, I had to vomit to get relief	3
	Yes, I had to seek medical attention to get relief	4
4 All patients answer Question 4, which is a stand-alone item to be evaluated as an exploratory outcome		
The following question concerns the amount of pain you have experienced when swallowing food. What was the worst pain you had while swallowing food over the past 24 hours?	None, I had no pain	0
	Mild	1
	Moderate	2
	Severe	3
	Very severe	4

Higher DSQ scores indicate more frequent or more severe dysphagia¹

The maximum score is 84.

ENDOSCOPIC REFERENCE SCORE (EREFS)

A CLINICIAN-REPORTED RATING OF THE SEVERITY OF 5 ENDOSCOPIC FEATURES IN EoE²

The **EREFS** assesses and grades the severity of proximal, mid, and distal endoscopic findings in EoE.

EREFS CLASSIFICATION³

EDEMA

- Grade 0 Absent (distinct vascularity present)
- Grade 1 Present (loss of clarity of vascular markings)



RINGS

- Grade 0 None
- Grade 1 Mild (subtle circumferential ridges)
- Grade 2 Moderate (distinct rings that do not impair passage of a standard diagnostic adult endoscope [outer diameter 8-9.5 mm])
- Grade 3 Severe (distinct rings that do not permit passage of a diagnostic endoscope)



EXUDATES

- Grade 0 None
- Grade 1 Mild (lesions involving <10% of the esophageal surface area)
- Grade 2 Severe (lesions involving >10% of the esophageal surface area)



FURROWS

- Grade 0 Absent
- Grade 1 Mild (vertical lines present without visible depth)
- Grade 2 Severe (vertical lines with mucosal depth [indentation])



STRICTURES

- Grade 0 Absent
- Grade 1 Present



Higher EREFS scores indicate higher endoscopic disease activity⁴

The total EREFS score from the proximal and distal regions ranges from 0-18.³

PEAK ESOPHAGEAL INTRAEPITHELIAL EOSINOPHIL COUNT

THE MOST COMMON HISTOLOGIC MEASURE TO CONFIRM DIAGNOSIS AND ASSESS TREATMENT OUTCOMES⁴

Most pathology reports use the **peak esophageal intraepithelial eosinophil count** (eosinophils per high-power field, or EOS/HPF) to confirm diagnosis (≥ 15 EOS/HPF) and determine treatment response.

CLASSIFICATION OF PEAK ESOPHAGEAL INTRAEPITHELIAL EOSINOPHIL COUNT⁴

Nonresponse	Histologic response	Histologic remission	Histologic normalization
≥ 15 EOS/HPF (Persistent eosinophilia)	< 15 EOS/HPF (Reduced eosinophilia)	≤ 6 EOS/HPF (Reduced eosinophilia)	< 1 EOS/HPF (Normal biopsy)

A peak esophageal intraepithelial eosinophil count of 6 EOS/HPF or lower indicates histologic remission⁴

EOSINOPHILIC ESOPHAGITIS HISTOLOGIC SCORING SYSTEM (EOE-HSS)

A MEASURE OF HISTOLOGIC CHANGES IN THE ESOPHAGUS OF 8 KEY FEATURES BEYOND EOSINOPHIL COUNT⁵

The **EoE-HSS** composite score is used as a complement to the peak esophageal intraepithelial eosinophil count to better discriminate treated from untreated patients as well as to detect pathology in biopsies devoid of eosinophils.

The EoE-HSS evaluates 8 key histological features in terms of severity (**grade**) and extent (**stage**) of abnormalities.

HISTOLOGICAL FEATURES⁵

SCORE: 0 (NORMAL) TO 3 (MOST SEVERE OR EXTENSIVE)

- | | |
|-------------------------------------|---|
| 1. Eosinophil information (EI) | 5. Dilated intercellular spaces (DIS) |
| 2. Basal zone hyperplasia (BZH) | 6. Surface epithelial alteration (SEA) |
| 3. Eosinophil abscess (EA) | 7. Dyskeratotic epithelial cells (DEC) |
| 4. Eosinophil surface layering (SL) | 8. Lamina propria fibers (LPF)
<i>Not commonly available in most biopsy samples.</i> |

Higher grade and stage scores indicate a greater degree of severity and extent respectively, with a maximum score of 24 for both.⁵

CLINICAL ASSESSMENTS IN EoE

A variety of clinical tools are available to measure the signs and symptoms of this chronic, progressive disease:

- **Dysphagia Symptom Questionnaire (DSQ)**
A patient-reported assessment of the frequency and severity of dysphagia¹
- **Endoscopic Reference Score (EREFs)**
A clinician-reported rating of the severity of 5 endoscopic features²
- **Peak Esophageal Intraepithelial Eosinophil Count**
A histologic measure of intraepithelial eosinophils to confirm diagnosis and assess treatment outcomes⁴
- **Eosinophilic Esophagitis Histologic Scoring System (EoE-HSS)**
A composite evaluation of 8 key histological features in terms of severity and extent of abnormalities⁵

References: **1.** Hudgens S, Evans C, Phillips E, Hill M. Psychometric validation of the Dysphagia Symptom Questionnaire in patients with eosinophilic esophagitis treated with budesonide oral suspension. *J Patient Rep Outcomes*. 2017;1. doi:10.1186/s41687-017-0006-5 **2.** Wechsler JB, Bolton S, Amsden K, Wershil BK, Hirano I, Kagalwalla AF. Eosinophilic esophagitis reference score accurately identifies disease activity and treatment effects in children. *Clin Gastroenterol Hepatol*. 2018;16(7):1056-1063. **3.** Hirano I, Moy N, Heckman MG, Thomas CS, Gonsalves N, Achem SR. Endoscopic assessment of the oesophageal features of eosinophilic oesophagitis: validation of a novel classification and grading system. *Gut*. 2013;62(4):489-495. **4.** Dellon ES, Gupta SK. A conceptual approach to understanding treatment response in eosinophilic esophagitis. *Clin Gastroenterol Hepatol*. 2019;17(11):2149-2160. **5.** Collins MH, Martin LJ, Alexander ES, et al. Newly developed and validated eosinophilic esophagitis histology scoring system and evidence that it outperforms peak eosinophil count for disease diagnosis and monitoring. *Dis Esophagus*. 2017;30(3). doi:10.1111/dote.12470

