

**SECTION:** Clinical  
**PROCEDURE TITLE:** Nutrient Challenge Test

**Procedure No.** 02006/v1/09/2018

**Review Officer:** Senior Scientist

**Review Summary:** v1

**Applicable To:** All Staff involved in the test

**Date Introduced:** 09/2018

**Next Review Date:** 09/2021

**Authority:** Director, Gastroenterology and Hepatology

**Replaces:** New procedure

**Key Words:** nutrient challenge, post-prandial

## **PURPOSE**

To assess patients' post-prandial symptoms using a standardised nutrient challenge as a measure of visceral sensory function

## **OUTCOME**

Minimise inconclusive or failed tests and the need for patients to repeat the test. Determine of symptoms reported by a patient are due to alterations of visceral sensory function (visceral hyperalgesia)

## **AUTHORISED TO UNDERTAKE THE PROCEDURE**

All Gastroenterology and Hepatology research staff appropriately trained to do the test.

## **CONTRAINDICATIONS**

Absolute: Swallowing difficulties, aspiration risk  
Relative: Lactose intolerance

## **RISKS AND PRECAUTIONS**

There is a risk that patients may vomit during the test. It is advisable to provide each patient with a vomit bag

## **STEPS OF THE PROCEDURE**

### **Patient preparation**

Patients must be nil-by-mouth from the night before (at least 8 hours)

### **Test preparation**

- Liquid meal: 3 packs of 237 mL Nestlé Resource Plus (154 kcal, 5.5 g protein, 22.4 g carbohydrate, 4.5 g fat/100 mL)
  - remove 37 mL from each pack to make 200 mL
- Timer (set to 5 minutes)
- Symptom questionnaire

### **Test administration**

- At baseline and 5 min after every consumed 200 mL dose, the intensity of five meal-related symptoms are assessed with a standardised visual analogue scale (Assessment of Symptom Intensities During the Nutrient Challenge, see Appendix below)

### **Test analysis**

- Each of the five meal-related symptoms are graded from 0–100 at each time point (by measuring with a ruler along the 100 mm symptom score line)
- A cumulated symptom score is then calculated by adding the scores for each symptom and subtracting the baseline score
- If at any stage, the patient is unable to drink any more of the Resource Plus, maximum scores are given to each domain from then onwards (e.g. patient was only successful in drinking the first 200 mL, hence a score of 500 is given for the cumulative 400 mL questionnaire section and 500 is given for the cumulative 600 mL questionnaire section)

## **EVALUATION METHOD**

The staff involved into the delivery of the test will update the procedure as new required.

## **SUPPORTING DOCUMENTS**

Assessment of Symptom Intensities During the Nutrient Challenge. Refer to [Appendix A](#).

## REFERENCES

1. Haag S, Talley N, Holtmann G (2004) Symptom patterns in functional dyspepsia and irritable bowel syndrome: relationship to disturbances in gastric emptying and response to a nutrient challenge in consulters and non-consulters. *Gut* 53 (10):1445-1451.
2. Holtmann G, Talley N, Neufang-Huber J, Goebell H (1996) Comparison of gastric mechanosensory thresholds and maximal tolerance of a liquid meal. *Gastroenterology* 110 (4):A680-A680.
3. Montaña-Loza A, Schmulson M, Zepeda-Gómez S, Remes-Troche JM, Valdovinos-Díaz MA. Maximum tolerated volume in drinking tests with water and a nutritional beverage for the diagnosis of functional dyspepsia. *World J Gastroenterol*. 2005 May 28;11(20):3122-6. PubMed PMID: 15918201; PubMed Central PMCID: PMC4305851.
5. Jones MP, Roth LM, Crowell MD. Symptom reporting by functional dyspeptics during the water load test. *Am J Gastroenterol*. 2005 Jun;100(6):1334-9.
6. Remes-Troche JM, Montaña-Loza A, Martínez JC, Herrera M, Valdovinos-Díaz MA. Drinking capacity and severity of dyspeptic symptoms during a water load test after Nissen fundoplication. *Dig Dis Sci*. 2007 Oct;52(10):2850-7.

**APPENDIX A: ASSESSMENT OF SYMPTOM INTENSITIES DURING THE NUTRIENT CHALLENGE**

<p><b>VISIT</b> (Week ) <b>Assessment of Symptom Intensities During the Nutrient Challenge</b> (1)</p>	<p>Screening No. _ _ _ _</p> <p>Patient Initials _ _ _</p> <p>Date _ _ _ _ _</p> <p style="text-align: right;"><u><b>Time 0 min</b></u>      <u><b>Volume 0 ml</b></u></p>
<p><u>Dear Patient,</u> Please mark on the following scales the intensity of your current tummy symptoms or complaints with a vertical line.</p> <p style="text-align: center;"><b><u>Stomach pain</u></b></p> <p style="text-align: center;">I _____ I (Not present) (Unbearably severe)</p> <p style="text-align: center;"><b><u>Fullness</u></b></p> <p style="text-align: center;">I _____ I (Not present) (Unbearably severe)</p> <p style="text-align: center;"><b><u>Nausea</u></b></p> <p style="text-align: center;">I _____ I (Not present) (Unbearably severe)</p> <p style="text-align: center;"><b><u>Retrosternal burning</u></b></p> <p style="text-align: center;">I _____ I (Not present) (Unbearably severe)</p> <p style="text-align: center;"><b><u>Regurgitation of acid or gastric content</u></b></p> <p style="text-align: center;">I _____ I (Not present) (Unbearably severe)</p> <p style="text-align: center;"><b><u>Other (specify):</u> _____</b></p> <p style="text-align: center;">I _____ I (Not present) (Unbearably severe)</p> <p><b>Please drink 200 ml of nutrient drink. After 5 min, please repeat recording of your symptoms.</b></p>	
<p>SIGNATURE &amp; DATE _____</p>	

<b>VISIT</b> <b>(Week )</b> <b>Assessment of Symptom</b> <b>Intensities During the</b> <b>Nutrient Challenge</b> <b>(2)</b>	<b>Screening No.</b> _ _ _ _
	<b>Patient Initials</b> _ _ _ _ <b>Date</b> _ _ _ _ _ _
<b><u>Time 5 min    Volume 200 ml</u></b>	

Dear Patient,

Please mark on the following scales the intensity of your current tummy symptoms or complaints with a vertical line.

**Stomach pain**

I \_\_\_\_\_ I  
 (Not present) (Unbearably severe)

**Fullness**

I \_\_\_\_\_ I  
 (Not present) (Unbearably severe)

**Nausea**

I \_\_\_\_\_ I  
 (Not present) (Unbearably severe)

**Retrosternal burning**

I \_\_\_\_\_ I  
 (Not present) (Unbearably severe)

**Regurgitation of acid or gastric content**

I \_\_\_\_\_ I  
 (Not present) (Unbearably severe)

**Other (specify):** \_\_\_\_\_

I \_\_\_\_\_ I  
 (Not present) (Unbearably severe)

**Please drink 200 ml of nutrient drink. After 5 min, please repeat recording of your symptoms.**

SIGNATURE & DATE

\_\_\_\_\_

<b>VISIT</b> <b>(Week )</b> <b>Assessment of Symptom</b> <b>Intensities During the</b> <b>Nutrient Challenge</b> <b>(3)</b>	<b>Screening No.</b> _ _ _ _
	<b>Patient Initials</b> _ _ _ _ <b>Date</b> _ _ _ _
<b><u>Time 10 min    Volume 400 ml</u></b>	

Dear Patient,  
Please mark on the following scales the intensity of your current tummy symptoms or complaints with a vertical line.

**Stomach pain**

I \_\_\_\_\_ I  
(Not present) (Unbearably severe)

**Fullness**

I \_\_\_\_\_ I  
(Not present) (Unbearably severe)

**Nausea**

I \_\_\_\_\_ I  
(Not present) (Unbearably severe)

**Retrosternal burning**

I \_\_\_\_\_ I  
(Not present) (Unbearably severe)

**Regurgitation of acid or gastric content**

I \_\_\_\_\_ I  
(Not present) (Unbearably severe)

**Other (specify): \_\_\_\_\_**

I \_\_\_\_\_ I  
(Not present) (Unbearably severe)

**Please drink 200 ml of nutrient drink. After 5 min, please repeat recording of your symptoms.**

**SIGNATURE & DATE**  
\_\_\_\_\_

<b>VISIT</b> (Week ) <b>Assessment of Symptom Intensities During the Nutrient Challenge</b> (4)	Screening No.    _ _ _ _ Patient Initials    _ _ _ _ Date    _ _ _ _ <div style="text-align: right;"><b>Time 15 min    Volume 600 ml</b></div>
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Dear Patient,  
 Please mark on the following scales the intensity of your current tummy symptoms or complaints with a vertical line.

**Stomach pain**

I \_\_\_\_\_ I  
 (Not present) (Unbearably severe)

**Fullness**

I \_\_\_\_\_ I  
 (Not present) (Unbearably severe)

**Nausea**

I \_\_\_\_\_ I  
 (Not present) (Unbearably severe)

**Retrosternal burning**

I \_\_\_\_\_ I  
 (Not present) (Unbearably severe)

**Regurgitation of acid or gastric content**

I \_\_\_\_\_ I  
 (Not present) (Unbearably severe)

**Other (specify): \_\_\_\_\_**

I \_\_\_\_\_ I  
 (Not present) (Unbearably severe)

**Please drink 200 ml of nutrient drink. After 5 min, please repeat recording of your symptoms.**

SIGNATURE & DATE  
 \_\_\_\_\_

---- End of the Test ----