

GUT MICROBIOTA FOR HEALTH

World Summit 2017

Shaping Gut Microbiota Through Diet

A report from the workshop “Nutrition and the Human Gut Microbiome: What should health professionals know for their daily practice?”



Paris | March 2017



A section of the



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Growing knowledge on gut microbiota offers great promise for optimizing health and managing disease. Many disorders of modern society, such as digestive, immune, metabolic or neurologic disorders, are now linked to dysbiosis—a disruption in the mutually beneficial relationship between a host and its microbiome, which may involve altered composition and activity of bacterial groups in the microbiota.

GUT MICROBIOTA DYSBIOSIS



Starting at birth and continuing through the life span, we live in harmony with the bacteria and other microorganisms we host in our gut – a dynamic collection called the gut microbiota.

These hundreds of trillions of bacteria are crucial for our health. They play a key role in important body functions, from keeping the digestive system running to helping the immune system defend against intruders like disease-causing viruses.

In order to perform its functions properly, our gut microbiota must be diverse, balanced, and stable¹.

But sometimes, the gut microbiota can be disturbed, a situation that scientists call "dysbiosis".

Although several types of foods may be involved in functional gastrointestinal symptoms, client health is usually best supported through personalized diets rather than restrictive diets. A GMFH workshop on nutrition and the gut microbiome focused on dietary tools for shaping the gut microbiota and managing functional gastrointestinal disorders (FGD) and food sensitivities.

Functional disorders are common in the general population. A majority of patients believe that food-items are important triggers of their gastrointestinal symptoms.

Carbohydrates are reported as a source of symptoms and FODMAP reduced diets prescribed.

Gluten-based products are also cited as an offending culprit and gluten-free diet (GFD) prescribed.

Lactose malabsorption is often diagnosed in these patients who are then placed on a dairy free diet (not necessarily lactose free milk and other products) without proper dietary advice.

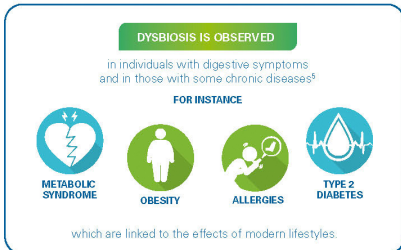
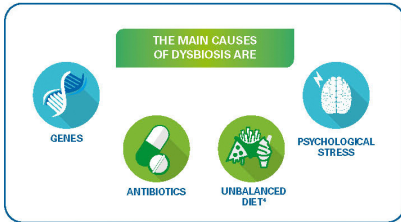
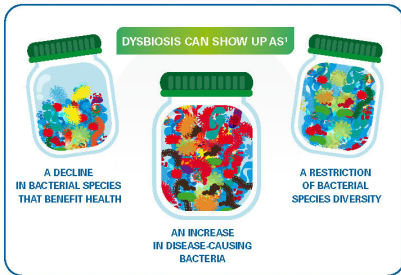
These diets are presumed as benign with no adverse effects. Scientific evidence is revealing a complex picture, and a slippery slope to excessive and restrictive dieting that impacts negatively on the microbiota and nutritional status of the patient.

The objectives of the workshop were to discuss the intricate relationship between diet and microbiota in health and disease.

To understand possible adverse outcomes of excessive dietary restriction in patients with abdominal symptoms.

To review diagnostic and dietary management algorithms in patients with abdominal symptoms.

Here's the low-down on gut microbiota dysbiosis:



DYSBIOSIS IS A DISRUPTION in the mutually beneficial relationship between a host (body) and its microbiota²



A BALANCED DIET AND A HEALTHY LIFESTYLE can help get the gut microbiota back into shape.

In addition to **Good nutrition⁶**

Specific probiotics^{7,8}

and prebiotics⁹

MAY CORRECT DYSBIOSIS¹⁰ OR PREVENT IT IN THE FIRST PLACE.



#GMFH2017

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Figure 1. Leading causes of dysbiosis and main tools for correcting it. Source: GMFH media centre.

Shaping Gut Microbiota Through Diet

A report from the workshop “Nutrition and the Human Gut Microbiome: What should health professionals know for their daily practice?”

Healthcare professionals—including registered dietitians and physicians specializing in nutrition and gastrointestinal disorders— had a unique opportunity to learn about how dysbiosis relates to nutrition and health at a special workshop during the 2017 **Gut Microbiota for Health World Summit**, held in Paris on March 11th & 12th, 2017.

The workshop covered key concepts about nutrition and gut microbiota, focusing on dietary tools for nurturing proper gut health and managing gastrointestinal functional disorders and food sensitivities. Of specific interest were the restrictive diets (for example, gluten-free diets) that are often prescribed for functional digestive disorders; speakers covered the complexities of excessive dietary restrictions and reviewed diagnostic and dietary management algorithms for those with abdominal symptoms. The workshop — “Nutrition and the Human Gut Microbiome: What should health professionals know for their daily practice?” — generated an engaging audience discussion and could be followed on Twitter using the hashtag #GMFH20174RDs.



Dr. Elena Verdú is Associate Professor at McMaster University (Canada) and Canada Research Chair in Inflammation, Microbiota and Nutrition. She serves as a member of the GMFH Digital Scientific Board.



Dr. Elena Verdú explained 3 main triggers of chronic GI diseases #GMFH20174RDs #GMFH2017

Workshop chair [Dr. Elena Verdú](#), Associate Professor at McMaster University (Canada), reviewed **evidence indicating that dietary patterns have a major influence on the microbiota and on global health and wellbeing**. The work of Verdú and others has demonstrated **important links between gut microbiota and immune homeostasis**, indicating that disruptions in host-microbiota interactions may play a role in the pathogenesis of many immune-mediated diseases.

Adults’ gut microbiota can be modified by factors such diet, medications, stress, and physical activity/exercise, **with diet being one of the most powerful factors**. When explaining the three main triggers of chronic GI diseases, she explained that gut function parameters such as intestinal motility, visceral perception, and barrier permeability (allowing low-grade inflammation) have also been [reported](#) to be closely linked with bacteria-diet interactions.

Disruptions in host-microbiota interactions may play a role in the pathogenesis of many immune-mediated diseases.

Dr. Verdú pointed out that **the exact characteristics of what can be considered a ‘healthy microbiome’ and the diet that promotes it have not been completely elucidated**, as microbiota profiles differ remarkably between healthy individuals. She highlighted, however, three possible features of the healthy gut microbiome: **1) Redundancy**, as many bacterial species can fulfill similar functions; **2) Temporary stability**,

considering that over time the microbiome is more similar to itself than to that of another healthy person; and **3) Resilience** to dietary changes, to antibiotic administration,

and to invasion by new species; resilience can be [defined](#) as “the amount of stress or perturbation that can be tolerated before a system’s trajectory changes towards a different equilibrium state”.

See [here](#) for the three main outcomes of the workshop as described by Dr. Elena Verdú.

Diet-Microbiota interactions are key pathogenic factors in chronic GI diseases

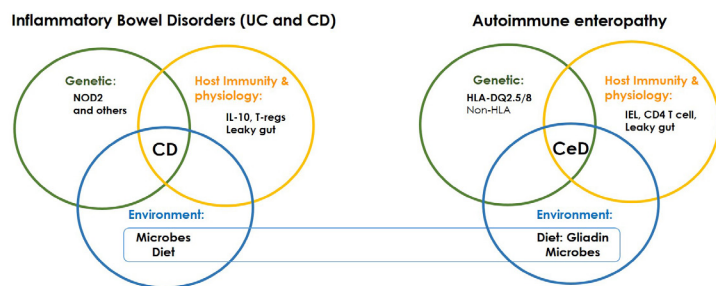


Figure 2. The main triggers involved in chronic GI diseases. (CD = Crohn’s disease, CeD = Coeliac disease)



Dr. Magnus Simrén is Senior Consultant in the Department of Internal Medicine at Sahlgrenska University Hospital (Sweden), and is Professor in Gastroenterology at Sahlgrenska Academy at the University of Gothenburg. He also belongs to the scientific committees of United European Gastroenterology (UEG) and the European Society of Neurogastroenterology and Motility (ESNM) and is a GMFH board of directors member.

The next part of the workshop addressed what is known about the ways particular therapeutic diets affect health through the gut microbiota.

Functional gastrointestinal (GI) disorders are common in the general population and patients often believe that food items are important triggers of their gastrointestinal symptoms. Without a proper diagnosis, patients tend to follow several restrictive diets, such as a diet low in fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (FODMAPs), a gluten-free diet (GFD) and a lactose-free diet. Although these diets are presumed benign, current scientific evidence shows that excessively restrictive diets may negatively impact the gut microbiota and nutritional status of the patient.

Dr. Magnus Simrén and **Dr. Stine Störsrud** focused on dietary approaches in the management of IBS—a heterogeneous functional disorder with a multifactorial aetiology that involves the interplay of both host and environmental factors. The speakers emphasized the role of dietary advice in the management of IBS, since both diet and lifestyle factors may trigger or

exacerbate symptoms of the condition. Between 40 and 84% of IBS patients believe that food items are important triggers of their gastrointestinal symptoms. For instance, carbohydrate malabsorption (e.g., lactose malabsorption) is reported as a source of symptoms in 70% of patients, and gluten-based products are cited as an offending culprit by roughly one in four.

Both Dr. Simrén and Dr. Störsrud emphasized **there is no specific “IBS diet” available yet and individualized dietary advice should be the main goal.** Although [several clinical trials](#) have showed the reduction of FODMAPs may be beneficial for IBS patients, a **low FODMAP diet is not always superior to traditional IBS dietary advice** (e.g. [that from the National Institute for Health and Clinical Excellence](#)), and the group of patients that benefits most from a low FODMAP diet is still unclear ([here](#), [here](#)). Besides this, long-term management (> 4 weeks) of IBS through the low FODMAP diet has not been fully studied yet, and data on [how the diet modulates the gut microbiota](#) suggests long-term use is not desirable. Dr. Simrén raised

Current scientific evidence shows that excessively restrictive diets may negatively impact the gut microbiota and nutritional status of the patient.

Dr. Simrén raised the possibility that the way forward could be less restrictive FODMAP-reduced diets, based on knowledge about effects of the different FODMAP components.



Dr. Stine Störsrud is a registered dietitian and faculty in the Department of Clinical Nutrition, Sahlgrenska University Hospital, Gothenburg (Sweden).

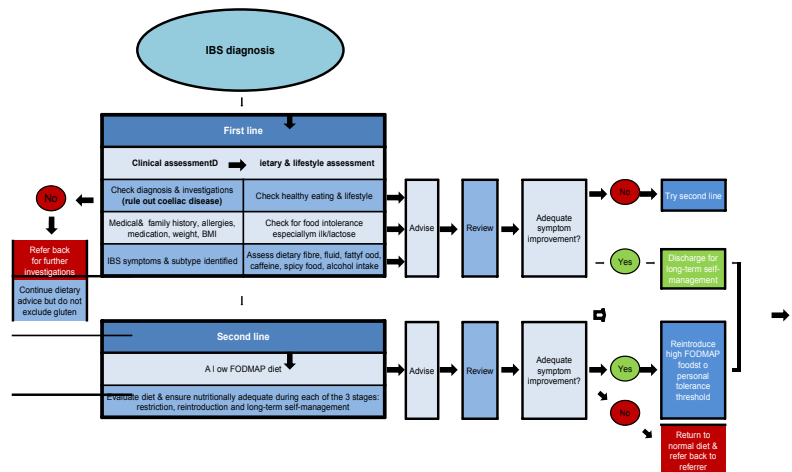
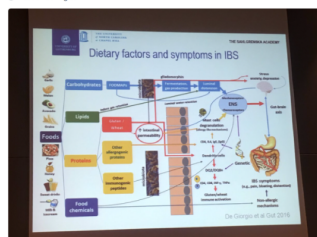


Figure 3. IBS dietary algorithm based on the British Dietetic Association. Source: McKenzie YA et al. *J Hum Nutr Diet.* 2016; 29(5):549-75.

Andreu Prados @andreuprados · 11 mar.
Enjoying #GMFH20174RDs workshop in Paris – Several dietary factors may be involved in IBS' symptoms by @MagnusSimren



Dr. Joseph Murray is an internist/gastroenterologist and Professor of Medicine at Mayo Clinic (USA).

the possibility that the way forward could be less restrictive FODMAP-reduced diets, based on knowledge about effects of the different FODMAP components.

Dr. Störsrud presented the IBS dietary algorithm based on a [2016 update](#) of the British Dietetic Association evidence-based practice guidelines (Figure 3). Only if first-line dietary assessment and interventions show further dietary changes are necessary to improve symptoms, second-line intervention based on a low FODMAP

of the colonic bacteria through [probiotics](#) and [fermentable fibres](#) (short-chain galactooligosaccharides) for more effective lactose metabolism were discussed as potentially useful approaches to improve lactose-related symptoms.

Celiac disease (CD) and non-coeliac gluten/wheat sensitivity (NCG/WS): Dr. Murray contrasted case descriptions of CD and NCG/WS to elucidate differences in their diagnosis and the role of dietary management. While symptoms are similar in both cases, in

When a patient is experiencing symptoms from eating foods that contain wheat, barley, rye or oats, it is important to first rule out CD. Dr. Murray emphasized patients must continue to eat gluten until they undertake a test for CD as this is essential for accurate initial diagnosis.

diet guided by a dietitian should be considered. The presenters indicated [probiotics](#) may also be useful in the management of IBS; however, the most beneficial species/strain, dose and duration of intervention remain unclear.

[Dr. Joseph Murray](#), professor at Mayo Clinic (USA), explored diagnosis and management of diet-induced symptoms.

Dr. Murray discussed how management of lactose intolerance should not be aimed at reducing malabsorption but rather at improving digestive symptoms. **Reduction of lactose intake (rather than exclusion) can be beneficial**, since [most patients](#) with self-reported lactose intolerance can ingest up to 12-18 g lactose daily without experiencing symptoms. **Lactase enzyme replacement was mentioned as the other primary treatment for lactose intolerance in clinical practice.** Directed modulation

NCG/WS there are no associated antibodies and no damage to the lining of the gut, in contrast with CD (an autoimmune disease). When a patient is experiencing symptoms from eating foods that contain wheat, barley, rye or oats, it is important to first rule out CD. Dr. Murray emphasized patients must continue to eat gluten until they undertake a test for CD as this is essential for accurate initial diagnosis. A differential diagnosis of NCG/WS, which involves testing for and ruling out CD, wheat allergy, and other disorders that could be associated with symptoms, may subsequently be discussed with the healthcare team. Particular care should be taken to avoid misdiagnosis of NCG/WS, rendering elimination diets useless or even harmful, since they potentially cause nutritional deficiencies. Working closely with a doctor and/or registered dietitian was encouraged to help the patient get an accurate diagnosis and adopt a diet that supports his/her health.

Fruitful discussions emerged from this workshop that aimed to provide health professionals with practical tools for assisting patients with food sensitivities.

An important take-home point is that restrictive diets in patients with abdominal symptoms should be undertaken very cautiously and only when there is a specific reason and a clear diagnosis of the condition.

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