

Slide 1



Slide 2

Diet and Microflora

- Alterations in diet can account for 57% of structural changes in the gut bacteria (genetics only account for 12%)
- Western diet high fat, high meat, fish and sugar diets (especially those devoid of nutrients) play a role in dysbiosis – higher levels of *Clostridium*
- Low carbohydrate diets increase *Bacteroidetes* and *Clostridium*
- Calorie-restricted diets prevent the growth of *Clostridium coccooides*, *Lactobacillus* spp. and *Bifidobacteria*



Slide 3

Diet and Microflora

- Diets rich in complex carbohydrates lower pathogenic bacteria and increase good bacteria
- A diet too high in polyunsaturated Omega 6 fatty acids also increases bad bacteria levels in one study (safflower oil) – higher omega 3 helps mitigate this
- It is not known if diet-induced dysbiosis is transient or long-term although studies have shown changes occur fairly quickly with strategic intervention
- If dysbiosis is a long-term event, then postnatal nutrition could be used to promote changes in the microbiota early in life during the development of a more stable microflora

Slide 4

Food and Bacteria			
Diet	Bacteria Affected	Effect on bacteria	References
High-Fat	Bifidobacteria spp.	Decreased (abundant)	[45]
High fat and high-sugar	Clostridium innocuum, Clostridium mitsuokae and Enterococcus spp.	Increased	[15]
	Bacteroides spp.	Decreased	[15]
Carbohydrate-reduced	Bacteroides	Increased	[46]
Calorie-restricted	Clostridium coccolides, Lactobacillus spp. and Bifidobacteria spp.	Decreased (growth prevented)	[45]
Complex carbohydrates	Mycobacterium avium subspecies paratuberculosis and Enterobacteriaceae	Decreased	[46]
	B. longum subspecies longum, B. longum and B. thetaiotaomicron	Increased	[47]
Refined sugars	C. difficile and C. perfringens	Increased	[48] , [49]
Vegetarian	E. coli	Decreased	[50]
High n-6 PUFA from safflower oil	Bacteroides	Decreased	[51] , [52]
	Firmicutes, Actinobacteria and Proteobacteria	Increased	[53] , [54]
	β-Proteobacteria	Increased	[55]
Animal milk fat	β-Proteobacteria	Increased	[56]

Slide 5

Special Diet Styles	
- You will have clients who have chosen to follow a diet style such as vegan, paleo, vegetarian or raw - It is not your choice as to how they eat – so helping them make the best choice for their diet style is the best way to work with them - Each style may have its own issues when it comes to gut health - These suggestions are adjustable and adapt them for the needs of the client - Clients with bigger issues need more intervention	

Slide 6

Regular Diet	
- This is the most common and the one you are most likely familiar with – - Meat, dairy, vegetables, fruits, grains legumes, nuts and seeds are all part of the diet (unless there are sensitivities and some foods have been removed) - The key here is to compare the proportion of meat to plant based foods to get more prebiotic foods into the diet - Traditional diets have about two portions of meat, fish etc a day – portion size = 3.5-4 oz (98-112 g) This can be adjusted to size and activity level of client 3/4 of the plate plants – 1/4 meat, fish	

Slide 7

Regular Diet

- Watch their Omega 6 to 3 ratio
- Omega 3 lowers inflammation of the mucosa and increases good bacteria
- Increase complex carbohydrates in the diet
- Replace refined sugars with whole sugars as much as possible
- Go for the 80/20 rule – 80% whole foods, 20% eat what they like as an option for making it liveable
- Gradually convert them



Slide 8

Regular Diet

- The key is to add more fermented foods
- Up to 2 fermented a day (with proper portion size) – they can do more if it works for them
- The other key is to add prebiotic foods which will occur as more plants are added to the diet but be strategic in your choices and your education of the client
- Fermenting grains, nuts and legumes may be an option (see video)
- Do not forget the steps to good digestion
- Bone broths

Slide 9

Vegetarian

- Hopefully they eat dairy (cow and/or goat) as this allows for all the fermented dairy sources to be added to their diet
- Yogurt, kefir, raw milk cheeses
- Don't assume they are eating a whole food diet so be strategic – plan their prebiotics and fermented foods
- Fermenting grains, legumes, nuts and seeds may an option
- Make sure they are getting sufficient glutamine (glutamic acid in plants)



Slide 10

Vegan

- Like vegetarians, you cannot assume they are having a whole food diet – strategically add in the prebiotics and fermented foods
- TVP is a source of glutamate (ion for of glutamic acid – usually attached to a mineral)
- The GOS source is going to have to come from legumes which need to be fermented
- They also need a vegetarian form of glutamine
- Make sure they are getting their resistant starch – sourdough bread is a good option
- EFAs – plant-based need vitamin-mineral cofactors



Slide 11

Paleo

- Biggest issues – no legumes and grains
- Resistant starch is going to have to come from nuts and seeds – which is not as substantial
- Plus too many nuts throws off omega 3 – 6 ratio
- Must ensure they increase their portions of the fruits and vegetables
- Some paleo people will do quinoa which is not technically a grain and is a source of resistant starch as are sweet potatoes
- Some paleo will do potatoes



Slide 12

Raw

- Biggest issue is not enough calories and not enough grounding foods
- Fermented foods can be extremely helpful to increase nutrient density and aid digestibility of the other raw foods
- Raw foods can be hard to digest but presumably they have made this choice because they can digest.
- Make sure they get a cross-section of fibres
- Resistant starch can come for sprouted legumes and grains, nuts, seeds and raw sweet potatoes



Slide 13

Focusing On Their Diet

- Extra attention is needed for people following special diets
- Food journals are essential – do not take their word for what they eat or how they eat
- A little education can help and lessen the need for supplements (although they are an option)
- Respect their choices and help them be the best paleo, vegan, vegetarian

