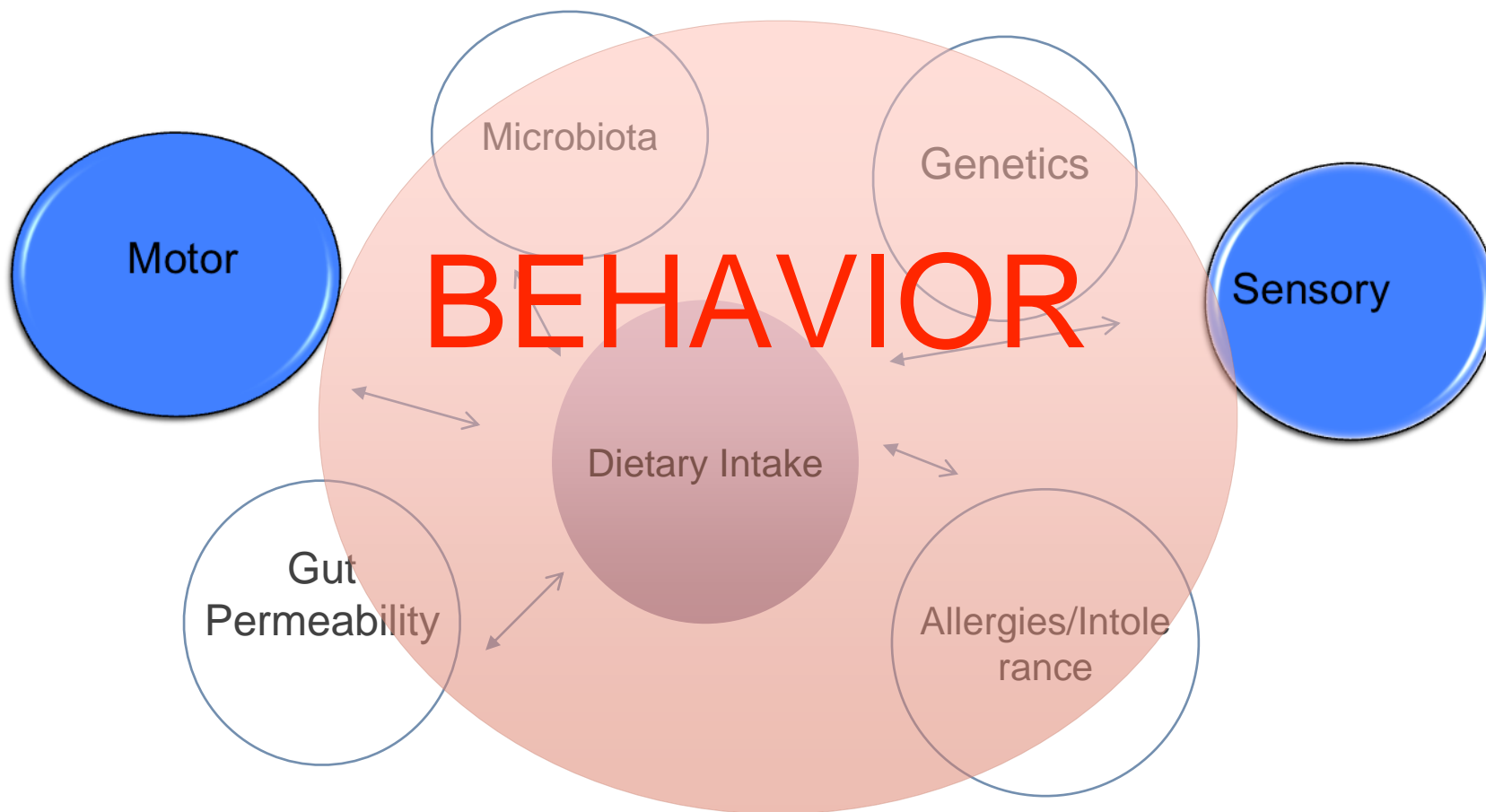




We Treat Kids Better

## Dietary Treatments in Autism Spectrum Disorders

Patricia Novak MPH RD

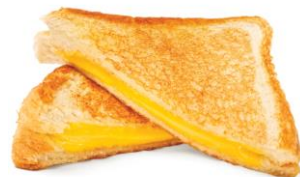


## Why NOT Consider Dietary Treatment of Autism Spectrum Disorders

- No evidence that diet CAN influence behavior and brain function in ASD
- Diets can be very restrictive
  - increases risk of deficiency especially with selective diets
  - hard to add a food back into a diet once you take it out
  - may increase risk of allergic reaction
  - diets can be socially isolating
- Can be very expensive
- Directing financial and emotional resource towards intervention that is likely to be difficult and yield little benefit

## Why Consider Dietary Treatment of Autism Spectrum Disorders

- Evidence that diet CAN influence behavior and brain function
  - Metabolic Disorders (PKU)
  - Vitamin Deficiencies (Beri-Beri)
  - Ketogenic diet
- To treat the common co-morbid issues of gastrointestinal disorders, allergies and intolerance
- Why not? Evidence of harm is limited
  - 30% have tried special diets(2003)
  - 53% gluten- free, casein-free diet
  - Parents often feel that they “have to” try it due to media or other promotion



1. Casein Free
2. Gluten Free
3. Casein + Gluten Free
4. Soy Free
5. Phenol Free
6. Oxalate Free
7. Yeast Free
8. FODMAPS
9. Additive Free



## Diet and Autism: Proposed Theories

Poor Digestion / Reduced Enzyme Activity



Detoxification:  
Sulphonation & Methylation



Inflammation in gut  
Reduced integrity of lining



Immunologic Factors / Bacteria and Yeast



Absorption of large

Absorption of large peptides:  
Gluten & Casein



Peptides absorbed and cross blood-brain barrier  
Alters brain development  
Alters brain structure

Restriction	Rationale	Support	Risks
<b>Yeast Free</b>	<ol style="list-style-type: none"> <li>1. Yeast overgrowth with yeast metabolites negatively influencing behavior.</li> <li>2. Antibiotic use is higher in children on the spectrum</li> </ol>	1. None.	<ul style="list-style-type: none"> <li>• Restriction of a variety of food depending on the yeast-free diet version used.</li> <li>• long term use of Nystatin or Diflucan often recommended</li> </ul>
<b>Additive Free</b>	<ol style="list-style-type: none"> <li>1. response to specific chemicals</li> </ol>	<ol style="list-style-type: none"> <li>1. Links of food dye (Blue 1 &amp; 2, Citrus Red 2, Green 3 ,Red 40, Yellow 5 &amp; 6) and Sodium Benzoate to ADHD</li> </ol>	None at all

Restriction	Rationale	Support	Risks
<p><b>Casein Free</b></p>	<ol style="list-style-type: none"> <li>1. Leaky Gut + Opiate Theory (Reichelt). Increased GI permeability allows casein derived peptides to cross blood brain barrier and attach to endorphin/opiate receptor sites.</li> <li>2. Carbohydrate intolerance including lactose, decreased lactase activity increases GI discomfort. (see FODMAPS)</li> <li>3. Allergy</li> </ol>	<ol style="list-style-type: none"> <li>1. Opiate theory discredited yet increased permeability seen in some kids.</li> <li>2. Reduced lactase activity, especially in boys.</li> <li>3. FODMAPS has support for IBS/IBD may be increased in autism</li> <li>3. Increased prevalence of allergies</li> <li>4. Most studies have not seen benefit.</li> </ol>	<ul style="list-style-type: none"> <li>• Calcium, vitamin D. More porous bones have been noted in two studies independent of CF diet although can exacerbate.</li> <li>• Protein especially for kids who avoid meat or having nut allergies</li> <li>• Calories especially for younger kids</li> <li>• Social isolation</li> <li>• If determined not to be an issue, may be difficult to reintroduce.</li> </ul>



Restriction	Rationale	Support	Risks
<p><b>Gluten Free</b></p>	<ol style="list-style-type: none"> <li>1. Leaky Gut + Opiate Theory (Dolan, Reichelt). Increased GI permeability allows gluten derived peptides to cross blood brain barrier and attach to endorphin/opiate receptor sites.</li> <li>2. Gluten sensitive or Celiac-like autoimmune response</li> <li>3. Allergy</li> <li>4. See FODMAPS</li> </ol>	<ol style="list-style-type: none"> <li>1. Opiate theory discredited yet increased permeability seen in some kids.</li> <li>2. Familial hx of autoimmune disorders common, increased risk of having child with ASD with maternal autoimmune disorder, yet no increased risk of Celiac seen</li> <li>3. Increased prevalence of allergies</li> <li>4. Most studies have not seen benefit.</li> </ol>	<ul style="list-style-type: none"> <li>• Fiber, iron, B vitamins (most GF products are NOT fortified as wheat based are).</li> <li>• Test for Celiac PRIOR to starting gluten free diet</li> <li>• Calories especially for kids with limited diets</li> <li>• Social isolation (but not so much anymore)</li> </ul>

Restriction	Rationale	Support	Risks
<b>FOD-MAPS</b>	<ol style="list-style-type: none"> <li>1. Abnormal GI function with reduced enzyme activity and altered microbiota</li> <li>2. Irritable bowel in some kids with alternating diarrhea and constipation</li> </ol>	<ul style="list-style-type: none"> <li>• Significant support for addressing IBS/IBD both may be higher in autism.</li> <li>• Similar but more structured than SCD which has popular interest.</li> <li>• Carbohydrate digestion</li> </ul>	<ul style="list-style-type: none"> <li>• Specific but extensive restrictions can lead to nutrient deficiencies, social isolation</li> <li>• Requires education and monitoring of nutritional status.</li> </ul>

## Diet Trial

- Parents want to try it.
- Thoughtful and graded removal
  - Identify foods that are acceptable PRIOR to starting
  - Assure there are sufficient accepted foods to start; a cranky hungry kid is not going to have improved behavior
  - Consider if some foods are used for emotional regulation
- Provide guidance with label reading
  - include all care providers
- Identify school substitutes if necessary
- Identify how to measure change

# Opinions on Dietary Treatment

- Diet study (Elder 2008)
  - No statistically significant results
  - Parents wanted to continue the diet after study ended.
- Consensus report (Buie 2010)
  - anecdotal evidence that there is a subgroup of children who may benefit
  - additional data is necessary before clinical recommendations made
- Systemic review of literature (Mulloy 2013)
  - opioid theory not supported
  - reported benefits may be due to “biological motivating operations”
- Systemic review (Mari-Bauset 2014)
  - “We recommend that it should be only used after the diagnosis of an intolerance or allergy to foods containing the allergens excluded in gluten-free, casein-free diets”.

# Our Experience with Dietary Treatment

- Parents are often committed to trying
- Parents need guidance to do an appropriate trial
- There appears to be a group of kids who do show benefits
  - Early history of formula intolerance
  - Evidence of atopy; eczema, allergies
  - GI concerns; reflux, constipation, funky poop
- Success varies
  - Normalization of bowel movements-potty training
  - More attentive, better sleep

## Considerations with Dietary Treatment

- Elimination diets are the gold standard for determining clinical response to food (allergy, intolerance, whatever)
- Removing a food from the diet may mean it won't be accepted again
- Removing a food from the diet/delaying introduction may promote allergic response in susceptible children
- Tiny, tiny changes *MAY* be detected- you can't just introduce a substitute and say it is the same food
  - GF pasta is NOT the same as wheat pasta
  - Hemp milk is not the same as cow's milk
  - Be VERY careful when messing with that child's "sacred" food

## Consider the Risk

- The first step, regardless of what dietary intervention is desired, is to create a health promoting diet and address deficiencies
  - What if the dietary change will improve behavior and increase intake?
  - What if the dietary change makes the diet less nutritious?
- Review weight and growth patterns and address (?)
- If the ability to change diet is limited, supplements may be required and intervention may be necessary for acceptance and use.
- This is not a solo operation, collaborate with occupational therapists, speech and language pathologists, social workers, psychologists, physicians, teachers, therapists, baby sitters and parents.

## Dietary Treatment of Autism is Medical Nutrition Therapy

- Medical nutrition therapy (MNT) is a therapeutic approach to treating medical conditions and their associated symptoms via the use of a specifically tailored diet devised and monitored by a registered dietitian or professional nutritionist. - Wikipedia
- the assessment of the nutrition status of a patient followed by nutrition therapy ranging from diet modification to administration of enteral or parenteral nutrition. -[thefreedictionary.com](http://thefreedictionary.com)
- To provide nutrition therapy, evidence of a problem should be identified and measures of success in place.
- If a diet is not working, don't keep doing it.

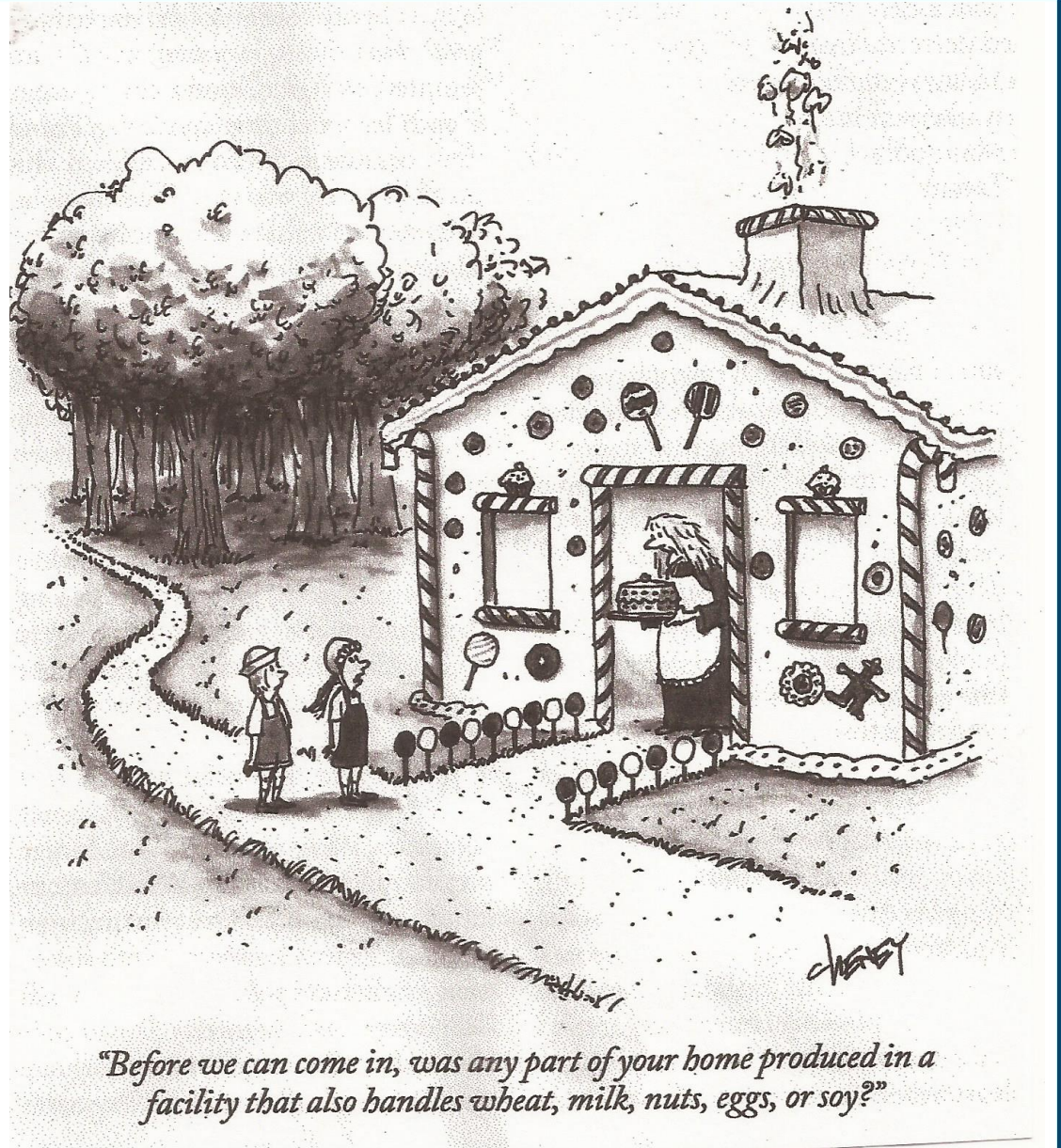


## **With Goals that are Consistent with Treatment of any Pediatric Issue**

- Optimal growth, weight gain and health resulting from age appropriate intake in all social settings of a varied, health-promoting diet that meets nutrient recommendations
- Individualized to consider developmental, biological and cultural differences

# Conclusion





Thank you.  
[pnovak@chla.usc.edu](mailto:pnovak@chla.usc.edu)