OBJECTIVES

• Nutrition
• Autism: DSM Criteria
• Autism & Nutrition - Physiology
• Myths vs. Facts
• Pica
• Health Promotion – Primary Prevention
• Documentation

BACKGROUND

• Cardiovascular disease (CVD) is one of the most common causes of death in adults with I/DD
• CVD is strongly associated with health behaviors specifically:
  • POOR NUTRITION and
  • LACK OF PHYSICAL ACTIVITY

BACKGROUND

• 93% of adults with I/DD in community have high fat diets
• Approx 69% do not consume enough fruits and vegetables
• Only 10% of adults with I/DD engage in physical activity, a min of 3 days/wk

BACKGROUND

• Common causes of obesity include:
  – MEDICATIONS
  – Sedentary lifestyle
  – Genetics
  – Environments
    – Lack of opportunity to control food choices
    – Lack of opportunity for choosing activities and exercise
BACKGROUND

MEDICATIONS:
Impact on nutritional status
1. Decrease/increase appetite
2. Nausea & vomiting
3. Altered taste or smell
4. Altered absorption

AUTISM: DIAGNOSTIC CRITERIA
Diagnostic Criteria for 299.00 Autistic Disorder
Six or more items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):
1. qualitative impairment in social interaction, as manifested by at least two of the following:
   • marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
   • failure to develop peer relationships appropriate to developmental level
   • lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)
   • lack of social or emotional reciprocity

AUTISM: IMPACT ON NUTRITION
"Recent clinical studies have revealed a high prevalence of gastrointestinal symptoms, inflammation, and dysfunction in children with autism." (Horvath and Perkman, 2002)

COMMON GI SYMPTOMS IN AUTISM
• History of antifungal use in childhood
• Dairy intolerance
• Poorly formed stools
• Chronic constipation
• Poor sleeping habits
• Aggression SIB
• Colic or reflux
• Thrush/hx of diaper rash
• Abdominal distension
• Bloating
• Relapse after response to antifungal
Other GI issues in ASD

- Picky eaters’ risks: FTT, IDA & other deficiencies (Zn, B12, Ca, protein)
- Sensory issues (assessment using a food diary: spicy, crunchy, sweet, salty)
- Diarrhea: r/o constipation & food diary needed (juice ++?)
- GERD: behavioral s/s (CdLS study: bite fist, pinch chin/neck, punch chest)
- Casein intolerance (would need Mg & Vit D supplements for casein-free diets)

GI DYSFUNCTION AUTISM

- Malabsorption
  - Vitamin deficiency, fatty acid deficiency, dry skin, irregular stool
- Immune dysregulation/inflammation:
  - Sleep disorders, aggression, SIB
- Malabsorption
  - Food sensitivity, poor weight gain, low stomach acid

PHYSIOLOGY OF THE GUT

- The gastrointestinal (GI) system is specialized to process ingested particulate or liquid nutrients by reducing them to an “absorbable” size (digestion).
- Large, polymeric macromolecules (starches, lipids, proteins, and nucleic acids) must be reduced to their monomeric molecular subunits (e.g. – proteins to amino acids) for ease of transport across cell membranes of the GI mucosal lining.

PHYSIOLOGY OF THE GUT

- 4 basic processes to complete nutrient degradation:
  1) mechanical degradation (i.e.-chewing and chewing);
  2) liquefaction via secretion of GI accessory glands (i.e. salivary, hepatic, pancreatic secretions, etc.)
  3) enzymatic hydrolysis (i.e.- amylases break starch molecules into monosaccharide sugar subunits)
  4) absorption via extensive mucosal membrane surface of lower GI tract.
PATHOPHYSIOLOGY OF GUT AND AUTISM

- Studies indicate that individuals with ASD suffer from increased rates of GI symptoms including:
  - Diarrhea
  - Constipation
  - Unformed stools
  - GERD

CAUSE IS ‘UNCLEAR’…..some research suggests:
- Increased antibiotic use CAUSING decreased normal gut microbiota
- Abundance of Clostridium in children with ASD
- Decreased digestive enzymes in individuals with ASD
- Increased intestinal permeability in individuals with ASD
MYTHS VS FACTS-AUTISM AND DIET

“A systematic review of the evidence regarding gastrointestinal (GI) problems in children with ASD found a lack of high-quality data. The authors concluded that the frequency and types of GI disorders observed in children with ASD are similar to those in children without ASD.”

CHELATION THERAPY

- Low levels of Gluthathione
  - Gluthathione responsible for primary defence against mercury, toxic chemicals, and toxic metals
  - Resulting in a higher level of burden of toxins in body
  - CHELATION THERAPY

FACT

- Limited supportive EVIDENCE-BASED research to effectively recommend this tx.

CHELATION THERAPY

<table>
<thead>
<tr>
<th>Modality</th>
<th>Efficient Absorption</th>
<th>Highly Effective</th>
<th>For Chronic &amp; Acute</th>
<th>Affordable &amp; Convenient</th>
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<td>IV EDTA Chelation</td>
<td>Yes</td>
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<td>Oral-EDTA Chelation</td>
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<td>No</td>
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<td>EDTA Chelation Suppositories</td>
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ANTIFUNGAL TX

- Treatment for autism is based upon the hypothesis that there is yeast overgrowth secondary to an imbalance in microbes in individuals with ASD
- This hypothesis became more popular after a report of two boys with autistic behaviors who had what was interpreted as yeast metabolites in their urine, suggesting candidal overgrowth

There is insufficient information about the efficacy and safety of the antifungal agents to make recommendations.
**PROBIOTICS**

- Probiotics as a treatment for autism is based upon the hypothesis that there is an imbalance in intestinal microbes in individuals.
- There is insufficient information about the efficacy of probiotics to make recommendations about their use in children with ASD.
- There are no current studies demonstrating harm.

**OMEGA 3 FATTY ACID**

- Some studies suggest that plasma omega-3 concentrations in children with ASD are decreased.
- Use supplement for cardiovascular benefit.
- No clinical correlation has been established.

**SECRETIN**

SECRETIN is a GI hormone that inhibits motility, release of gastric acid. It stimulates secretion of pancreatic fluid and bicarbonate. There is limited evidence to support this hypothesis.

(Williams, Wray and Wheeler, 2009)
HELMINTHIC THERAPY

Helminthic Therapy
- Early scientific stages
- Clinical trials underway
- Uses parasites

FACT
- Takes apx 12 wks to observe + change
- Taken orally every 2-3 wks
- Expensive
- NO supportive evidence-based research

GLUTEN FREE-CASIEN FREE DIET (GF-CF)

GF-CF: Increased permeability allows gluten and casein peptides to leak from the gut
- ASD not found to have increased rates of celiac disease or
- Very difficult to sustain
- Has worked at the individual level but not a recommendation for Autism in general

PICA
PICA

Possible causes:
• OCD - obsessive compulsive dx?
• Problems of the hypothalamus?
• Lack of stimulation in environment?
• Gastric reflux?
• Deficiency of iron, zinc, calcium?

Other considerations:
• Cigarettes: nicotine dependence, anxiety
• Broken glass: suicide, psychiatric illness
• BMs: PTSD, psychosis
• Rocks, sticks or pieces of metal: endogenous opiate addiction?

Pica: risks & complications
• Infection: parasites
• Lead toxicity
• Bezoars: collections of indigestible matter that accumulate and coalesce in the GI tract
  (usually in the stomach, but may extend to jejunum)
  – Trichobezoar: composed of hair, carpet, string, clothing
  – Phytobezoars: plant materials with high cellulose & tannins such as celery, leeks, grape skins, persimmons, etc.)
• Obstruction/Perforation of GI tract
• Death!

HEALTH PROMOTION-
PRIMARY PREVENTION

Barriers:
• Lack of buy-in & engagement: programming, attitudes, accommodations
• Lack of opportunities
• Poor diets: too many calories!
• Sedentary lifestyles: 10% - 3X per week, 50% none: double the general population!
• Side effects of Rx
• Lack of staffing
• Lack of funding (for food & equipment)

Components of good health promotion/primary prevention include:
1. Exercise
2. Nutrition
3. Health education
4. Caregiver support
HEALTH PROMOTION-PRIMARY PREVENTION- DIETARY GUIDELINES

- Focus on fruits and vegetables
- Ensure calcium rich products
- Choose health whole grain products
- Choose lean proteins
- Limit fat intake
- PORTION CONTROL IS KEY!

Documentation

- Weight charts
- Food diary
- Bristol stool form
- Pain checklist
- Scatterplot
- A-B-C sheets
- Waist circumference measure
- Rashes/ scratching?

Graph

<table>
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<tr>
<th>Name</th>
<th>SAMPLE</th>
<th>Date</th>
<th>Weight</th>
<th>BP</th>
<th>Pulse</th>
<th>Waist Circumference</th>
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Food Diary

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<th>TIME</th>
<th>AMOUNT</th>
<th>FOOD</th>
<th>SYMPTOMS/REACTIONS</th>
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<tr>
<td>09:30</td>
<td>½ cup Kellogg's Corn Flakes</td>
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<tr>
<td>10:45</td>
<td>3 slices watermelon</td>
<td>4 slices Green apple</td>
<td>6 Raisins</td>
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<tr>
<td>11:30</td>
<td>2 glasses water</td>
<td>6 Ritz crackers</td>
<td>3 slices Kraft cheese</td>
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<tr>
<td>18:30</td>
<td>2 bowls Spaghetti with meat sauce</td>
<td>2 slices Garlic bread</td>
<td>500ml Coffee with 2%milk</td>
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<tr>
<td>20:30</td>
<td>1 piece Chocolate cake</td>
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The Non-Communicating Adult Pain Checklist—NCAPC

Score of 8 or more indicates pain & the higher the score, the higher the amount of pain.

Breau, L. et al., 2009.
## Individualized

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## RESOURCES

- **Interactive Autism Network**
  - [http://www.iancommunity.org/](http://www.iancommunity.org/)
- **Autism Speaks**
  - [http://www.autismspeaks.org/](http://www.autismspeaks.org/)
- **Autism Ontario**
- **Autism Canada Foundation**
- **Global Autism Alliance**
- **Canadian Autism Spectrum Alliance**
  - [http://www.asdalliance.org](http://www.asdalliance.org)

## Bookstores

- **Parentbooks**: located in Toronto!
  - [http://www.parentbooks.ca/](http://www.parentbooks.ca/)
- **Brookes Publishing**
- **Cherry Hill Books**

## Organizations

- **DDNA**
  - [www.ddna.org](http://www.ddna.org)
- **AADMD**
  - [www.aadmd.org](http://www.aadmd.org)
- **NADD**
  - [www.thenadd.org](http://www.thenadd.org)
Resources:

• Autism Central: www.autismcentral.ca/research/
• Autism Connects: www.autismconnects.com
• Autism Society of Canada: www.autismsocietycanada.ca/

Resources:

• Canadian Autism Intervention Network: http://www.cairn-site.com
• Health Canada’s Autism website: www.hc-sc.gc.ca/dc-ma/autism/index_e.html
• Surrey Place www.surreyplace.on.ca/
• CNSC www.community-networks.ca/

Thank you!