

Down Syndrome Alliance Education Series:

Munroe Meyer Dietitian and Speech Pathologist - Feeding and Nutritional Strategies for Wellness

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Learning Outcomes

- At the conclusion of the session, the participant will identify patient population and dysphagia and oral motor assessment
- At the conclusion of the session, the participant will identify a tongue thrust swallow
- At the conclusion of the session, the participant will identify treatment approach for a tongue thrust swallow
- At the conclusion of the session, the participant will identify the collaboration with speech pathology and nutrition



Assessment / Evaluation

- Oral motor evaluation
 - Oral motor skills refers to the movement and coordination of the structures and muscles of the face (lips and jaw) and tongue blade as it relates to swallowing and chewing to masticate
- Preferred food and liquid trials of different textures, if they will accept
- Adequate and safe swallow



Tongue Thrust

A forward position of the tongue blade at rest and a thrust against or between and out of the mouth during swallowing.



Treatment

- Repeated exposure to an upright spoon presented on top of tongue
- Flipped EZ Spoon





Collaboration

SLP often co-treats with RD for optimal treatment results.

Nutrition Recommendations

- Common Nutritional Issues
- Health Issues from Selective Eating
- Nutrient Influence on Absorption
- Supplements



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Nutrition & Down Syndrome

- Feeding difficulties can stem from low muscle tone and behavioral food refusal.
- Texture preference can drive food choices.



Other issues that can impact nutrition:



- Malabsorption due to gastrointestinal malformations
- Constipation and/or reflux related to decreased gut motility
- Endocrine dysfunction
- Seizures
- Autism
- Later in life, risk for elevated weight



Personalized Nutrition Therapy

An individualized dietitian session includes:

- Medication interaction
- Nutritional analysis
- Abilities and preferences





Individualize Approach

- Full nutrition assessment with 3 day food log
- Assure adequate weight/height growth
- Prioritize nutrition gaps:
 1. Macronutrients and calories
 2. Address constipation issues
 3. Balance Iron and Calcium
 4. Variety
 5. Address any other micronutrient imbalance
 6. Consider supplements if needed or desired for preventative purposes

Health Issues due to Selective Eating



- Xerophthalmia (vitamin A deficiency)
- Delayed wound healing (zinc and/or iron deficiency)
- Tooth decay / caries (excess carbohydrate; insufficient fluoride)
- Scurvy (vitamin C deficiency)
- Rickets (calcium and/or vitamin D deficiency)
- Calf tenderness / foot drop (thiamin deficiency)
- Demineralization of the bone (calcium/vit D/phos deficiency; Vit A excess)
- Peripheral neuropathy (Vitamin B deficiency; Vit B6 toxicity)

Health Issues due to Selective Eating



- Vitamin A and D deficiencies may increase autism traits and increase ASD scores
 - Vitamin D supplementation showed significantly social, behavioral and concentration improvements
- Iron deficiency affects behavioral, speech and cognitive functions, delay wound healing, increase fatigue
- Zinc deficiency may affect taste perceptions
- Vitamin C deficiency may lead to joint pain and difficulty walking
- Constipation may lead to reflux and GI pain

Chips, Cheetos, Chick Nugs, Oh My!



Preference for snack foods is common.

- Consistent with crunch and/or texture
- Consistent in taste and smell
- Easy to eat/chew
- Meat, fruit, veggies can be difficult textures to eat



Nutrients' Influence on Absorption



VS



Nutrients' Influence on Absorption



VS

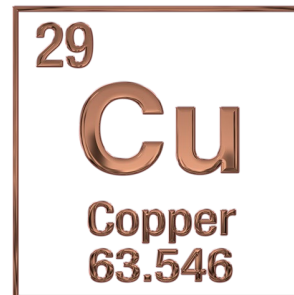




Nutrients' Influence on Absorption



vs





Cycle of Limited intake

Excessive calcium intake

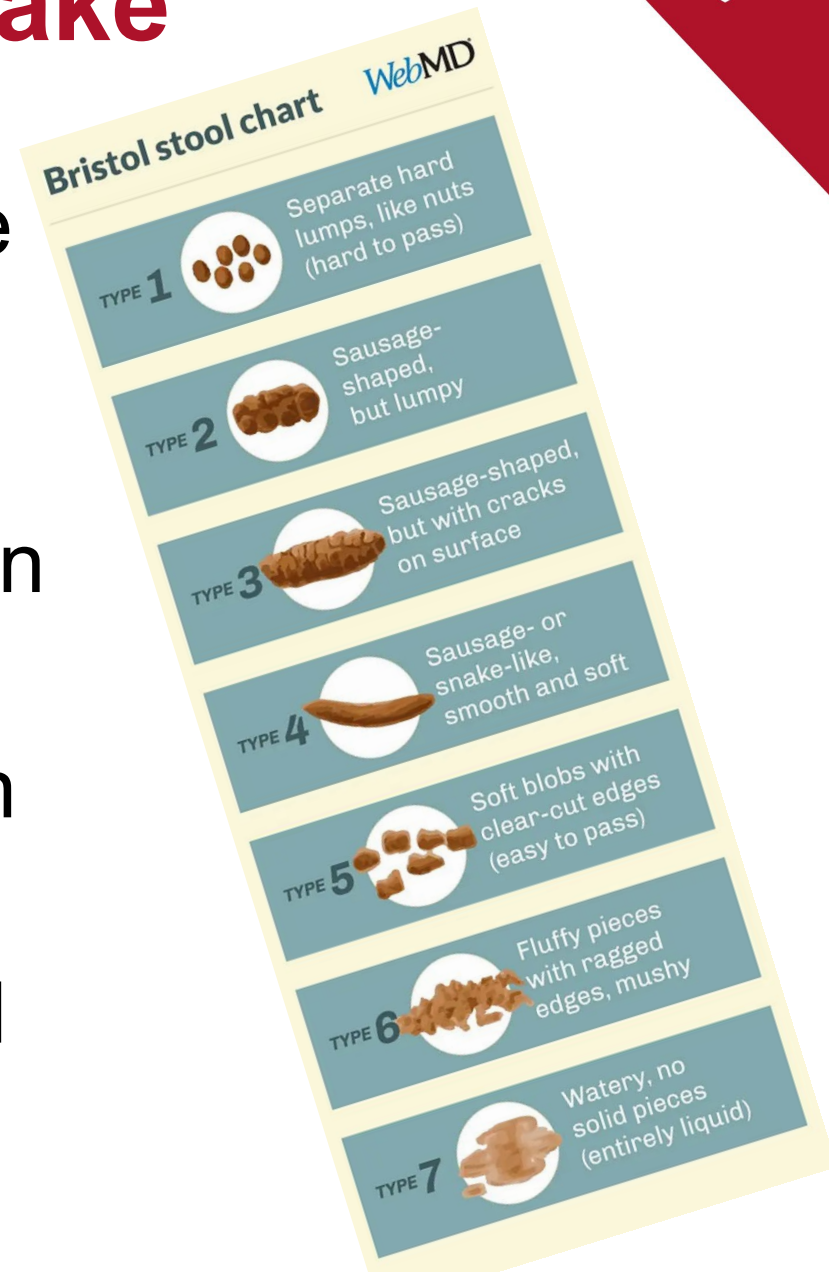
Iron supplements

Low fiber intake

Limited water consumption

Hard stools / constipation

Heart burn and/or limited
appetite





ApplePruneFlax

Easy to make recipe
to help soften stools:

- 4 oz applesauce
- 4 oz prune puree*
or baby food
prunes
- 1 Tbsp ground
flaxseed



*<https://www.healthylittlefoodies.com/prune-puree/>

Diet Variety

A well-balanced diet with a wide variety of foods, especially whole foods and high fiber foods, nourishes a healthy gut microbiome.





Blenderized Foods

Makes some foods easier to eat!

- Need right amount & type of liquid
- Need right amount of food
- Good blender
- Don't be scared to add condiments!
- Mix dishes are great in the blender
- Add some fat to help smooth the puree





Food ideas

Other easy to eat foods:

- ✓ Bone broth
- ✓ Peanut butter oat energy balls or mix peanut butter into oatmeal
- ✓ Ground beef in gravy
- ✓ Chopped chicken and chopped veggies on soaked bread or enchilada sauce
- ✓ Freeze dried fruit
- ✓ Veggie tots





Learning to cook

Give independence and food autonomy.

Encourage trying new foods.

Can still blenderize or chop any menu items for consistency needs.



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- Healthy ingredients
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Individualize Approach

- Adjust food consistency to meet needs – either for food acceptance or to meet oral/motor needs
- Introduce foods commonly eaten at home
- May need specific supplements
- Identify any food intolerance
- Consider diet restrictions only after interventions





Individualize Approach

Nutrients of focus:

- Children: Iron and calcium
- Omega-3
- Vitamin E
- Zinc
- Vitamin D
- Mediterranean diet?

Potential tests/labs:

- Modified barium swallow
- Vitamin D, 25-hydroxy
- Ferritin, serum
- Hemoglobin
- Hematocrit
- Hemoglobin A1C
- Thyroid function tests (TSH, T3, T4)
- Celiac panel

Supplements – the good, the bad & the ugly



- Filling in nutrition gaps vs prophylactically
- Third party testing vs pharmaceutical grade
- “Use this code for a discount!”



Photo by [Alexander Grey](#) on [Unsplash](#)



Supplements in research

- Targeted nutritional intervention supplement
- Green Tea
- Vitamin E
- Zinc
- Acetyl-Carnitine

“The principal safety concern for herbal supplements is liver damage, and hepatotoxicity has been reported with at least 60 herbs, herbal drugs, and herbal supplements. Many factors influence the safety of herbal products. Substances that may be safe in their natural form may perform differently in high concentrations.”



Supplements in research

Table II. A sample of studies that have investigated dietary supplementation for Down syndrome

Substances tested	Treatment group	What was tested	Results	Comments	Authors	Year
Piracetam (used in Alzheimer disease, stroke, dyslexia)	Children with Down syndrome	Cognitive function	No improvement	High rate of adverse effects (aggression, violence, agitation, irritability, sexual arousal, poor sleep and decreased appetite).	Lobaugh et al ¹⁵	2001
Resveratrol and ECGC	Mouse model of Down syndrome	Tissue samples	Restoration of mitochondrial biogenesis	No clinical in vivo effects tested.	Valenti et al, ¹⁶	2016
Vitamins C and E	Children and teenagers with Down syndrome	Blood samples	Decreased oxidative stress	No clinical or in vivo effects tested.	Parisotto et al ¹⁷	2014
Antioxidants (selenium, zinc, vitamins A, C, and E) with and without folic acid	Infants with Down syndrome under age 7 mo at time of enrollment	Developmental assessment, communication assessment, and tests of blood and urine	No clinical or statistically significant effects.		Ellis et al ¹⁸	2008
Cognitive training with or without ECGC	Adults with Down syndrome	Multiple behavioral, cognitive, and functional measures	Improvement in visual recognition memory, inhibitory control and adaptive behavior	No effect on 13/15 skills on neuropsychological battery and 8/9 adaptive skills tested.	de la Torre et al ¹⁹	2016

Supplements – the good, the bad & the ugly



Use supplements to fill nutritional gaps if needed although food is ideal for nutritional needs.

If using supplements to address a problem or concern, define the concern and get a baseline of symptoms. Objectively track symptoms to observe for improvements.

If using prophylactically, assure long term safety of dosage.



Resources on Supplement Use

Pub Med – look for literature review or meta-analysis

Natural Medicine Database -
naturalmedicines.therapeuticresearch.com

Consumer Labs –
consumerlab.com

NatMed
a trchealthcare brand

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Search > Look up a scientific, common, or brand name for any natural medicine [Advanced Search](#)

Interaction Checker

Effectiveness Checker

Nutrient Depletion

Pregnancy & Lactation

Adverse Effects

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Amy's approach:

- Goal is to work toward a food intake that meets nutrient needs, NOT perfection.
- Can assist with weaning from oral or enteral formula.
- Balance calcium and iron intake to meet needs but not exceed.
- Wait to start a restricted diet after all nutrient needs are met. Consider waiting until nutrient needs are met before supplementing with vitamins/herbs or determine goal with supplementation.
- Increasing variety is a huge win!



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