

Helping to Optimize Health in Children with Down Syndrome

Dietary guidelines:

- Healthy, balanced diet
 - Include lots of fresh green vegetables
 - Eat a 'rainbow' – focus on getting a variety of different vegetables over the course of a week, especially those that are dark/deep/rich in colour
 - Any 'plate' at a meal should be roughly: ½ vegetables, ¼ protein and ¼ whole grains. In general ½ as many fruits as vegetables a day, with a total of 8 – 10 servings of fruits and vegetables in one day. A serving of most fruits or vegetables is roughly the size of your child's fist. Every day should also contain a small amount of healthy fats (like unheated olive oil or coconut oil even).
- I like to have families do a diet diary and track everything that their child eats and drinks for at least 5 days (up to 14 days depending on the situation). On this I will have them indicate where there are symptoms that their child is having so that then you can look for patterns. It can also be very eye opening about whether or not your child actually has a healthy, balanced diet.
- Many do well avoiding gluten-containing foods (incl wheat, oats, barley, rye) and dairy
- Strictly limit the amount of sugar, hydrogenated and fried fats
 - There is no safe amount for any child
 - Sugar has an almost immediate and profound affect on behaviour plus it increases inflammation, encourages constipation and depresses the immune system; sugar is addictive so it can be rough when trying to eliminate it, but after a couple of weeks behaviour regulates again
 - Other names of sugar: dextrose, glucose, malt syrup, corn sweetener, fructose, maltose, agave, fruit juice concentrate, invert sugar, sucrose, honey
 - Signs of too much sugar: more than one cup of juice a day, more than one cup of sweetened milk/day, sweet treats daily, sweetened breakfast cereals, child picks at meals but gobbles dessert, eats snacks that are mostly cookies, granola bars, has breakfasts with syrup on a regular basis
 - Reactions to sugar – deteriorating behaviour, increased tantrums, snacking over eating at meals, moody, aggressive, overly sensitive
- Avoid artificial sweeteners - saccharin, aspartame, sucralose; none of them are without controversy
 - Stevia appears the mildest and probably the safest for children
 - Definitely completely eliminate aspartame
- Eliminate artificial colouring entirely if you can – especially the red and the blue!
- If you have a picky eater, continue to make small consistent steps. Most parents aren't successful changing eating habits because they try to do too much at one time and it overwhelms the child.
 - You can try the 'EAT' program:
 - E = eliminate any irritants that may be causing a reaction
 - A = add one food at a time
 - T = try one bite of this food each night for 2 weeks
 - The basis of this is that kids need time to get used to foods that are unfamiliar and that food preferences develop over time. Most kids get

used to what they are exposed to and tend to prefer things that they know. Very few kids like a new food the first time they try it. Most need to try something 7 – 10 times before they know that they do/don't like it.

- Always try starting with something that is similar in some way to a food that they already really like – whether it's texture or colour or constituency or food group. You don't want everything about it to be completely unfamiliar.
 - Don't be afraid to serve lunch or dinner meals for breakfast...who says breakfast has to be cereal?
 - Try serving food in alternate way – with a toothpick, in ice cube or muffin trays, cut into squares or other shapes, deconstructed. I don't care if my kids eat with their hands as long as they're eating good food. I figure I have lots of time to teach them to be civilized; right now I just want to know they are healthy.
 - I have a Pinterest page with lots of great ideas for picky eaters:
<https://www.pinterest.com/DrLisaGhent/>
- Signs that your child might have food sensitivities:
 - They have a pale/pasty complexion, chronic skin issues (eczema, psoriasis), bowel issues (constipation, diarrhea (which is typically gluten)), sick 'all the time', cravings beyond reason (typically dairy or wheat based products), complain of muscle or joint soreness, lethargic after eating, reflux, gas/bloating
 - How to address:
 - Eliminate the food group in question for a full 4 – 6 weeks
 - Sugar and gluten are the best ones to start with
 - If you're removing calcium remember to ensure adequate calcium otherwise in diet or via supplement and don't substitute soy for dairy

Extra dietary/supplement support:

- Many kids do better with additional digestive enzymes and liquid ones may be easier to administer than a pill/capsule (though you can empty the capsules out as a powder). There are some chewable digestive enzymes available:
 - NOW Papaya enzymes
 - Genestra Bio Enzymes
 - Enzymedica Kids Digest chewables
- Trace minerals may be a good idea to help with proper thyroid and immune function
 - Zinc, potassium, copper
 - Look for a balanced multi-mineral like Trace Mineral's Research, Kids Multi (liquid) or Natural Factors, Big Friends, Children's Chewable Multi-Vitamin and Multi-Mineral (chewable)
 - If your child seems like they are repelled by the taste or smell of many foods, consider a zinc deficiency
 - Foods rich in zinc are beef, crab, pork, chicken legs, baked beans, cashews, pumpkin seeds, chickpeas
- A greens powder is great as a source minerals, plus it can help to improve energy (in adults, too!)
 - Greens to look for: chlorella, spirulina, algae
- Essential fatty acids / omega 3 fatty acids from cold water fish for healthy brain and nerve function
 - I like Nordic Naturals Children's DHA liquid (cod liver oil); DHA is the omega 3 that kids need the most of. Second choice for kids would be Sealicious.

- Signs of an essential fatty acid deficiency: dry scaly skin patches, permanent goose bumps (back of arms), dry straw like hair, excessive/visible ear wax, excessive thirst, rare/no thirst, toe walking
- If child is having too many fats – loose stools or tummy ache
- Adults need either a blend of EPA/DHA or mostly EPA. I like Nordic Naturals best for over the counter omega's, but Ascenta, NutraSea and Sealicious are good alternatives if you want a liquid. Barlene's is very popular because it tastes so good.
- I haven't used it before, but there is a company in Ottawa, Ontario that has developed a vitamin/mineral formula specifically to address the needs of people with Down syndrome. The company is called Nutri-Chem Laboratories and their products are listed for kids as young as 2 years old. The product name is MSB Methyl Plus. It's expensive but looks very comprehensive.
- Probiotics can be great for regulating digestion and improving immunity. For most kids I recommend at least a bottle a year (usually in September before cold/flu season starts), but if your child has ever been on antibiotics and never on probiotic you should use them right away to ensure they have healthy flora in their gut.
 - The regular dose I recommend for most kids is between 3 and 10 billion CFUs per day, taken before bed.
 - Brands I like best are RenewLife and Progressive.

Stimulating brain development and encouraging nerve function:

- Music therapy, social activities, structured conversations, dancing, exercising/physical activity

Addressing constipation:

- Ideally want at least 1 bowel movement in a day
- Ensure adequate water intake
- Ensure foods that are prone to causing constipation are removed from the diet entirely: dairy, applesauce, rice, toast, bananas, sugar
- Ensure adequate fiber (both soluble – oatmeal or an apple - and insoluble – broccoli, bran)
- If constipation gets worse with fiber consider a lactose intolerance
- Signs that constipation might be from lack of fiber:
 - Child eats mostly 'white' foods, has fewer than 2 servings of veg or fruit a day, avoids whole grains, has small stools that are hard and dry
- Signs that constipation might be from milk intolerance:
 - Main source of protein is cheese, milk, yogurt, constipation started before the age of 1, there is a history of problems with infant formula, your child used to have issues with dairy that you thought they outgrew, your child prefers drinking milk to eating food, if you've ever seen blood in the stool
- Liquid magnesium (citrate or oxide) can be helpful in lieu of a chemical stool softener (like PEG)
- A high dose probiotic is a must with chronic constipation (at least temporarily), but you shouldn't go too high without consulting a nutritionist or naturopath for assistance to get your child on the right one.
- If the issue is intestinal hypotonia child may have a 'budha belly'. A supplement to try is L-carnitine (made up of methionine and lysine). Can help enhance the contraction of muscles specific to the bowel. Use it as a liquid and gradually increase the dose as you

wean off an osmotic laxative (if using one). Add it too quickly → causes cramping, nausea and diarrhea.

- A brand that you can find in Canada is NOW L-carnitine liquid at 1g/tbsp
- The right end dose is 50 – 100 mg/kg but start less than that and work up

Sleep issues:

- Many kids have trouble falling asleep quickly and just as many have trouble staying asleep
- My experience has been that if we can encourage a good night of sleep for a few weeks (if even using a gentle supplement), that during that time the body heals and resets its own sleep/wake cycle and then the supplements can be weaned out. Don't underestimate the healing nature of sleep. Most kids need between 10 – 12 hours a sleep in a 24 hr period to function optimally.
- Some tricks for the kids that don't fall asleep easily/quickly (so taking more than 15 – 30 min to fall asleep):
 - Consistent, calming routine for the 1.5 hours before bed. The same pattern every, single night, with next to no exceptions
 - No screen time within the last hour before bed
 - Adequate physical activity during the day (especially outside time) – minimum 60 minutes.
 - Decreasing total amount of sugar consumed during the day.
 - Dealing with any anxiety that the child may have
 - The darker the bedroom, the better
 - Consider that you might be missing your child's optimal 'sleep window'. We all have one, when our natural melatonin starts to increase. If we miss that then our stress hormones kick in to keep us awake and those take 2 – 3 hours to calm down again. So perhaps try doing a bedtime that is 30 min to 1 hr earlier than you've been doing to see if that helps.
 - Supplements that can be used:
 - Melatonin (liquid or tab that dissolves under the tongue)
 - GABA (chewable)
 - L-theanine (chewable)
 - Magnesium (malate or bisglycinate)
- Tricks for kids that don't stay asleep:
 - The darker the bedroom the better
 - Strategies for helping lower anxiety and stress; sometimes teaching children mindfulness techniques to use when they wake up can be helpful
 - A small protein snack before bed
 - And in general, a diet that encourages healthy blood sugar balance
 - Sound/white noise in the room through the night (or something they can activate easily) – for example, the noise making part of the popular baby Sleep Sheep is compact, easy to turn on and has great sounds that kids find soothing
 - Supplements that can be used:
 - Magnesium (malate or bisglycinate)
 - GABA or L-theanine (chewables) taken when they wake up