Nutrition for the Selective Feeder

Stephanie Brown, MSPH, RD, CSP, LDN Nutritionist II <u>brownstep@kennedykrieger.org</u>





Webinar Disclosure Statement

Kennedy Krieger Institute's Center for Autism and Related Disorders (CARD) does not take responsibility for information shared in this public event. Please keep all questions general and do not disclose personal health information (PHI) during the question and answer (Q&A) segment. This webinar will be recorded. By attending this webinar, you are consenting to being recorded.

The Q&A segment is **NOT** anonymous.



Polling & Survey – Required for CEU/Certificate Attendees!

Instructions:

- 1. On your smartphone, laptop, or tablet, go to **www.Slido.com** or scan the QR code.
- 2. Enter the event code: **#SB01.**
- 3. Enter your name and email.
- 4. Click "Join."
- Polling is used to track attendance.
- CEU/certificate attendees MUST respond to every Slido poll in this webinar to receive credit.
- CEU/certificate attendees MUST complete the feedback survey after the webinar has ended. The survey will pop-up on your screen once the training ends.

Event Code: SB01





ASHA Disclosure Slide

Financial Disclosures: Kennedy Krieger Institute, Employer

Non-Financial Disclosures: Kennedy Krieger Institute



Objectives

- 1. Understand the various methods of assessing a child's diet.
- 2. Review strategies for developing an age appropriate, well-balanced diet.
- 3. Discuss appropriate accommodations for those children with restrictive diets.
- 4. Understand how gastrointestinal disorders can affect a child's intake.
- 5. Know when to refer to a dietitian.



What is selective feeding (SF)?

Child only eats within a range of preferred foods and will not eat outside that range.

- Moderate SF: Child can find something to eat in most situations.
- Severe SF: Completely avoid entire food groups, textures, or liquids necessary for proper development. Their eating habits interfere with family life.

Can present in one or more of the following forms:

- Trouble accepting and swallowing different textures
- Refusing to eat any solids or liquids
- Oral motor and sensory problems
- Tantrums at mealtimes
- Refusing to eat certain food groups
- Choking, gagging, or vomiting when eating



What does a healthful diet look like?



Over the age of 1: MyPlate





Assessing Diet





When assessing a child's diet, what are the factors that need to be considered?

(i) Start presenting to display the poll results on this slide.

1. Energy Needs (aka. Calories)

- Numerous methods of calculating a child's calorie needs
 - Schofield Method
 - WHO Equations for Resting Energy Expenditure (REE)
 - Dietary Reference Intake
- Easiest way of determining if a child is meeting their calorie needs is by looking at their growth



Growth Charts

WHO Growth Charts

- Length for age
- Weight for age
- Weight for length
- Head circumference for age

CDC Growth Charts

- Birth to 36 months
- Length for Age
- Weight for Age
- Head circumference for age
- Weight for length
- Children 2-20 years
- Stature for age
- Weight for age

BMI for age





Weight for Length



- Chart is from the WHO
- Used for children under the age of 2 years



Weight for Stature



- Chart is from the CDC
- Used for children 2-5 years of age



BMI for Age



enter for Autism and Related Disorders at Kennedy Krieger Institute

Interpretation of Growth Charts

Percentiles	Interpretation
< 5 th percentile	Underweight or wasting
5 th – 10 th percentiles	Risk of underweight
10 th - <85 th percentiles	Normal
85 th - <95 th percentiles	Overweight
>95 th percentile	Obese



Goal is consistency

- Overall, we want a child to plot along their usual trajectory.
- "Bouncing" around on the growth curve is not ideal.





2. Fluid needs

- Symptoms of poor fluid intake include:
 - Less frequent urination
 - Dark colored urine
 - Constipation
 - Dry mouth
 - Dry skin
 - Cracked lips
 - Thick saliva





Maintenance Fluid Requirements

- Recommend using the Holliday-Segar Formula for Maintenance Fluid Requirements by Weight.
- Goal is 75-100% of fluid needs



Adapted from Cellucci, M. (2020, July). Dehydration in Children. *Merck Manuals.* https://www.merckmanuals.com/professional/pediatrics/dehydration-and-fluid-therapy-in-children/dehydration-in-children#v1089210



Example

• 5 year old female child weighs 20.4 kg

1500 + 20 ml/kg (0.4 kg) = 1508 ml



• Child should take 1131-1508 ml (~37-50 oz) to meet 75-100% of fluid needs



3. Diversity of diet





Development of Diet



Say no to calorie counting

- Takes focus away from a balanced diet
- Calorie counting is hard and unsustainable for most families
- Instead, focus on portion sizes for meals and snacks







How many food groups should be included in a child's meal?

(i) Start presenting to display the poll results on this slide.

Meal Pattern

- 3 meals and 2-3 snacks per day
- At each meal, aim for 3-5 different food groups
- At each snack, aim for 2-3 different food groups





Portions for Toddlers

- General rule of thumb for children 1-4 years of age: 1 tablespoon of each food for each year of age
- Example: 3 year old would get 3 tablespoons of each food offered

3 tablespoons <u>X 3-4 different foods</u> 9-12 tablespoons = $\sim 2/3-3/4$ cup of food

• Note: 16 tablespoons = 1 cup of food





Portions for Toddlers & School Age Children

Food Group	Servings per Day	Portion Size for Ages 1 to 3	Portion Size for Ages 4 to 6	Portion Size for Ages 7 to 10	
Fruits	2–3 servings	¹ ⁄4 cup cooked, frozen, or canned	¹ ⁄4 cup cooked, frozen, or canned	⅓ cup cooked, frozen, or canned	
		1/2 piece fresh	1/2 piece fresh	1 piece fresh	
		¼ cup 100% juice	⅓ cup 100% juice	1/2 cup 100% juice	
Vegetables	2–3	¼ cup cooked	¼ cup cooked	1/2 cup cooked	
	servings		1/2 cup salad	1 cup salad	
Grains	6–11	1/2 slice bread	1/2 slice bread	1 slice bread	
servings	¼ cup cooked cereal, rice, or pasta	⅓ cup cooked cereal, rice, or pasta	½ cup cooked cereal, rice, or pasta		
		⅓ cup dry cereal	¹ / ₂ cup dry cereal	³ ⁄4–1 cup dry cereal	
		2–3 crackers	3-4 crackers	4–5 crackers	
Meats and other	2 servings	1 ounce meat, fish, chicken, or tofu	1 ounce meat, fish, chicken, or tofu	2–3 ounces meat, fish, chicken, or tofu	
proteins		¼ cup cooked beans	⅓ cup cooked beans	½ cup cooked beans	
		½ egg	1 egg	1 or 2 eggs	
Dairy	2–3	½ cup milk	½ cup milk	1 cup milk	
	servings	1/2 ounce cheese	1 ounce cheese	1 ounce cheese	
		⅓ cup yogurt	1/2 cup yogurt	³ ⁄4–1 cup yogurt	

https://www.healthychildren.org/English/healthy-living/nutrition/Pages/Portions-and-Serving-Sizes.aspx



Portions for Teenagers

- Similar in size to that of an adult.
- Use the hand method for appropriate portions



Fruits and







Dairy





Servings per Day for Teenagers

Step 1: Determine level of physical activity

Level of Physical Activity	Minutes a Week of Moderate Intensity
Sedentary	No activity beyond baseline
Low Active	Beyond baseline but < than 150 minutes
Active	150 to 300 minutes
Very Active	> 300 minutes

Step 2: Determine energy requirements



Estimated Average Energy Requirements

		Boy	ys		Girls			
Age	Sedentary	Low Active	Active	Very Active	Sedentary	Low Active	Active	Very Active
9	1530	1787	2043	2359	1415	1660	1890	2273
10	1601	1875	2149	2486	1470	1729	1972	2376
11	1691	1985	2279	2640	1538	1813	2071	2500
12	1798	2113	2428	2817	1617	1909	2183	2640
13	1935	2276	2618	3038	1684	1992	2281	2762
14	2090	2459	2829	3283	1718	2036	2334	2831
15	2223	2618	3013	3499	1731	2057	2362	2870
16	2320	2736	3152	3663	1729	2059	2368	2883
17	2366	2796	3226	3754	1710	2042	2353	2871
18	2383	2823	3263	3804	1690	2024	2336	2858



Portions for Teenagers

• Step 3: Go to http://myplate.gov/myplate-plan and click on the appropriate meal plan

Age Group	Calorie	e Level								
Ages 12-23M	700	800	900	<u>1000</u>						
Ages 2-3	<u>1000</u>	<u>1200</u>	<u>1400</u>							
Ages 4-8	<u>1200</u>	1400	<u>1600</u>	<u>1800</u>	2000					
Ages 9-13	<u>1400</u>	<u>1600</u>	<u>1800</u>	2000	2200	<u>2400</u>	2600	2800	<u>3000</u>	320
Ages 14+	1600	1800	2000	2200	2400	2600	2800	3000	3200	

Image from https://www.myplate.gov/myplate-plan



Example: 2000 Calories

Step 4: Use portion recommendations to develop meal plan



Vegetables

2 cups

1 cup from the Fruit Group counts as:

- 1 cup raw, frozen, or cooked/canned fruit; or
- ¹/₂ cup dried fruit; or
- 1 cup 100% fruit juice

Read more

 $2\frac{1}{2}$ cups

Read more



5¹/₂ ounces

1 ounce from the Protein Foods Group counts as:

- 1 ounce seafood, lean meat, or poultry; or
- 1 egg; or
 - 1 Tbsp peanut butter; or
 - ¼ cup cooked beans, peas, or lentils; or

Read more



3 cups

- 1 cup from the Dairy Group counts as:
- 1 cup dairy milk or yogurt; or
- 1 cup lactose-free dairy milk or yogurt; or
- 1 cup fortified soy milk or yogurt; or
- 1% ounces hard cheese

Read more



6 ounces

1 ounce from the Grains Group counts as: - 1 slice bread; or - 1 ounce ready-to-eat cereal; or

1 cup from the Vegetable Group counts as:

- 2 cups leafy salad greens; or

- 1 cup 100% vegetable juice

- 1 cup raw or cooked/canned vegetables; or

- $\frac{1}{2}$ cup cooked rice, pasta, or cereal

Read more

Image from https://www.myplate.gov/myplate-plan/results/2000-calories-ages-14-plus



Ensure Variety



Fruits & Vegetables

- Provide dietary fiber, potassium, vitamin C, A, and folate
- Include different colored vegetables and fruits (green, orange, red, purple, etc.)





Grains

WHOLE GRAINS



- Grains provide thiamin, riboflavin, niacin, iron, calcium, zinc, and folate
- Increase variety
- Make half of grains, whole grains.
- Many gluten free grains such as rice, corn and quinoa.



Proteins

- Proteins provide amino acids, B vitamins, vitamin E, iron, zinc and magnesium
- Significant push in recent years for plant-based protein sources
- Plant-based proteins increase intake of unsaturated fats, dietary fiber, and vitamin D and limit sodium and saturated fats
- 20 different types of amino acids. 9 are classified as essential and must come from diet.
 - Larger amounts are animal products
 - Smaller amounts in plant proteins
 - Regardless of what you eat, you need variety





Dairy & Dairy Substitutes

- Dairy foods provide vitamin A, D, B12, riboflavin, zinc, calcium, and phosphorus.
 - Fluid milk > yogurt > Greek yogurt > cheese
- Choose a variety of dairy foods
- Choose a dairy substitute if cannot consume milk



Center for Autism and Related Disorders at Kennedy Krieger Institute

Comparison of Dairy Substitutes

• Per 8 oz cup

Milk Type	Whole Milk	Soy Milk (1)	Oat Milk (2)	Almond Milk (3)	Ripple Milk (4)
Calories	160	110	130	30	95
Protein (gm)	8	8	2	1	8
Fat (gm)	8	4.5	7	2.5	4.5
Calcium (mg)	300	450	245	450	440
Vitamin D (mcg)	2.5	3	0	2.5	6

• Best substitutes are soy milk and ripple milk.

Silk Original Soy Milk
 Califia Farms Oat
 Milk
 Silk Unsweetened
 Almond Milk
 Ripple Milk Original



Cultural Considerations

- Every food has it's place in a healthy diet
- Ask parents/caregivers what foods they want to see their child eat
- Determine which food group that food falls into
- Ensure variety continues and stick with appropriate portions



https://eatsmartmovemoreva.org/category/recipes/myplate-inspired-dishes-from-around-the-world/

Center for Autism and Related Disorders at Kennedy Krieger Institute

Don't Forget Fluid

- In general, pair servings of drinks with meals and snacks to meet at least 75% of fluid needs
- Recommend 16-24 oz of milk or dairy substitute per day for most children
- Limit juice consumption:
 - 4 to 6 oz for children 1-6 years of age
 - 8-12 oz for children 7-18 years of age
- Meet balance of fluid needs with water







Complications

What are some factors that can impact a child's diet





What is the most common GI issue among children with autism and feeding problems?

(i) Start presenting to display the poll results on this slide.

Constipation

- Constipation affects up to 30 percent of all children
- Dietary changes to help:
 - Increase fluid intake
 - Increase fiber intake
 - Age of child in years + 5 = g of fiber/day
 - Consume soluble and insoluble fiber
- Sometimes require medication and/or behavioral intervention





Gastroesophageal Reflux

- Infants:
 - Common treatment is to thicken formula/breast milk feedings with baby cereal
 - 1 tablespoon of rice cereal + 2 oz of formula = ~27 kcal/oz
 - Commercial options: Similac Spit-Up or Enfamil A.R.
- Children:
 - Recommend smaller, more frequent meals
 - Avoid caffeinated beverages such as regular tea and soft drinks
 - Limit amount of high-fat foods



Medical Restrictive Diets

- Food Allergies
- Eosinophilic Esophagitis (EoE)
- Food Protein-Induced Enterocolitis Syndrome (FPIES)
- Renal Disease
- Celiac Disease
- In-born Metabolic Error



Diet Plan for Restrictive Diets

• Know which specific foods or food groups are being avoided and find substitutes

Food	Vitamins and Minerals
Dairy (1,2)	Vitamins A, D, and B12, riboflavin, zinc, calcium, and phosphorus
Eggs (1)	Vitamins B12, iron, riboflavin, pantothenic acid, biotin, selenium, lutein, vitamins A, D, E, B12
Soy (1)	Thiamin, riboflavin, pyridoxine, folate, calcium, phosphorus, magnesium, iron, zinc
Wheat (1,3)	Thiamin, riboflavin, niacin, iron, calcium, zinc, and folate
Peanuts/Tree Nuts (1, 4)	Vitamin E, niacin, magnesium, manganese, and chromium
Fish/Shellfish (4)	Niacin, vitamins B6, B12, A, and E, DHA

1. Mofidi, S. Pediatrics-English, Edition, 2003, 111(6), 1645-1653.

- 2. Kim, J., et al. Nutrition research and practice, 2013,7(6), 488-494.
- 3. Saudacher, H.M., & Gibson, P.R. British Journal of Nutrition, 2015, 114(10), 1539-1541.

4. Kids with Food Allergies – A Division of the Asthma and Allergy Foundation of America. *Replacing lost nutrients due to food allergy.* Retrieved from https://www.kidswithfoodallergies.org/page/relacing-lost-nutrients.aspx



Gluten Free, Casein Free Diet



- Most commonly used dietary intervention for children with ASD
- Based on hypothesis that gluten and casein act like false neuropeptides in the brain
- Strict adherence is difficult and may be associated with nutritional deficiencies
- Evidence of efficacy is limited and weak
- Generally, do not recommend for management of ASD symptoms



When to refer to dietitian

- Excessive thinness and wasting
- Excessive weight or weight gain
- Extremely limited diet (multiple food groups avoided)
- Fluid concerns
- Unfamiliar conditions that affect growth or nutritional status
- Unsure of what to do



In Summary

- Before developing a diet, assess child's current intake to determine if they are meeting their energy, fluid, and micronutrient needs
- At meal times, include servings from 3-5 food groups
- At snack times, include servings from 2-3 food groups
- Variety is the spice of life
- Pair fluids with meals and snacks to meet hydration needs
- Keep in mind a family's cultural dietary practices.
- Increase intake from other food groups when one or more are restricted
- When in doubt, refer to a dietitian



Resources

- Growth Charts: <u>https://www.cdc.gov/growthcharts/clinical_charts.htm</u>
- MyPlate: <u>https://www.myplate.gov/</u>
- HealthyChildren.org: https://www.healthychildren.org/English/Pages/default.aspx



References

- Madra, M., Ringel, R., Gross Margolis, K. (2020). Gastrointestinal Issues and Autism Spectrum Disorder. Child Adolesc Psychiatric Clin N Am, 29, 501-513. <u>https://doi.org/10.1016/j.chc.2020.02.005</u>
- Marí-Bauset, S., Zazpe, I., Mari-Sanchis, A., Llopis-González, A., & Morales-Suárez-Varela, M. (2014). Evidence
 of the gluten-free and casein-free diet in autism spectrum disorders: a systematic review. *Journal of child
 neurology, 29*(12), 1718–1727. <u>https://doi.org/10.1177/0883073814531330</u>
- Meyer R, De Koker C, Dziubak R, et al. (2015) A practical approach to vitamin and mineral supplementation in food allergic children. *Clin Transl Allergy.*, 5:11. <u>http://doi.org/10.1186/s13601-015-0054-y</u>
- Robin SG, Keller C, Zwiener R, Hyman PE, Nurko S, Saps M, Di Lorenzo C, Shulman RJ, Hyams JS, Palsson O, van Tilburg MAL. (2018) Prevalence of Pediatric Functional Gastrointestinal Disorders Utilizing the Rome IV Criteria. J Pediatr., 195:134. DOI: <u>10.1016/j.jpeds.2017.12.012</u>
- Sampson HA, Aceves S, Bock SA, et al. (2014). Food allergy: a practice parameter update-2014. *J Allergy Clin Immunol.*, *134*(5):1016-25.e43. http://doi.org/10.1016/j.jaci.2014.05.013.
- Sathe N, Andrews JC, McPheeters ML, Warren ZE. (2017). Nutritional and Dietary Interventions for Autism Spectrum Disorder: A Systematic Review. *Pediatrics*, 139(6), e20170346. https://doi.org/10.1542/peds.2017-0346
- Steutel NF, Zeevenhooven J, Scarpato E, Vandenplas Y, Tabbers MM, Staiano A, Benninga MA. (2020). Prevalence of Functional Gastrointestinal Disorders in European Infants and Toddlers. *J Pediatr., 221:*107.
- Van den Berg MM, Benninga MA, Di Lorenzo C. (2006). Epidemiology of childhood constipation: a systematic review. *Am J Gastroenterol*, *101(10)*,2401.



Question & Answer (Q&A) Segment.

Instructions: Toggle over to the Q&A section in Slido to enter questions.

Questions are selected at random by the moderator. We cannot guarantee your question will be answered during the Q&A segment.

The moderator may make small changes to a question for clarification purposes.

The Q&A segment is not anonymous. Please refrain from sharing any personal health information (PHI) or any other identifying information.



Center for Autism and Related Disorders at Kennedy Krieger Institute

slido

Audience Q&A Session

(i) Start presenting to display the audience questions on this slide.