

Ketogenic Diet Basics: The modified Atkins Diet

Stacey Bessone, RDN, LDN
Johns Hopkins All Children's Hospital
St. Petersburg, Florida

About the Ambassador

Stacey Bessone, RDN, LDN



Stacey Bessone is a dietitian at the Institute for Brain Protection Sciences, Department of Neurology at Johns Hopkins All Children's Hospital in St Petersburg, Florida. Her practice is devoted exclusively to all forms of the Ketogenic diet, in both inpatient and clinical settings. Stacey received her BS degree in Dietetics and Nutrition from Florida International University in Miami, Florida, and has concentrated her almost 21 years of dietitian experience to pediatrics. She routinely provides presentations to physicians and residents, and has spoken nationally on the classic Ketogenic diet. Stacey has a passion for the diet and educating others to increase awareness of dietary therapies as a viable treatment option for epilepsy and other neurological disorders. She lives in Tampa with her husband and son

Objectives



- Describe the guidelines for use of the Modified Atkins Diet and an appropriate patient for the diet
- Formulate an educational plan to instruct a family on the Modified Atkins Diet
- Participate in a case study applying new knowledge from the MAD presentation

Modified Atkins Diet (MAD)



- Alternative diet therapy for the Ketogenic diet (KD)
- Similar to the classic KD (CKD) in that it is high fat/low carbohydrate
- Less restrictive – does not require weighing of foods
- Beneficial for patients who:
 - Have difficulty tolerating the restrictiveness of the KD
 - Need quick dietary intervention
 - Limited time/resources for the CKD
- May help with initiation of the CKD

Choosing the Right Patient



- History of CKD with response and could not maintain strictness
- Older kids that eat out (less social stress)
- Children over 5 that have big appetites

Choosing the Right Patient



- Can be difficult for kids with food texture issues (meats)
- Children 5 and under, suggested better response to the CKD
- Hard for tube feedings
- Sometimes harder for picky eaters. Using CKD at a lower ratio is better

Studies Using MAD



- Created at Johns Hopkins Hospital in 2003
- About 45% of patients with epilepsy will respond to MAD with greater than 50% seizure reduction

Kossoff EH, Doward JL. The Modified Atkins Diet. *Epilepsia* 2008; 49 (Suppl8): 37-41

- However, some may still need the classical KD to achieve optimal results. In a 2010 study with 27 patients, 10 had at least 10% additional seizure reduction switching from MAD to the classical KD, including 5 patients who achieved seizure freedom (mostly with myoclonic-astatic epilepsy)

Kossoff EH, Borsarge JL, Miranda MJ, Wiemer-Kruel A, Kang HC, Kim HD. Will seizure control improve by switching from the modified Atkins diet to the traditional ketogenic diet. *Epilepsia* 1010; 51: 2496-2499

Studies Using MAD



A randomized trial using MAD in addition to medical treatment versus medical treatment alone described patients age 2-14 years who had failed 3 AED medications. Among children who were on MAD, 30% had a seizure frequency reduction of >90% compared with 7.7% in the medication only group.

Sharma S, Sankhyan N, Gulati S, et al. Use of the modified Atkins diet for the treatment of refractory childhood epilepsy; a randomized trial. *Epilepsia* 2013; 54: 481-6

Studies Using MAD



- A trial of MAD in 25 patients with Lennox-Gastaut Syndrome performed in India showed that 9 had greater than 50% reduction in seizures at 12 months with 5 having >90% seizure reduction, and 3 patients seizure free.

Sharma S, Jain P, Gulati S, et al. Use of the Modified Atkins Diet in Lennox Gastaut Syndrome. *J Child Neurol.* 2014.

Studies Using MAD



- 30 children started on MAD with 400 kcals of KetoCal® in the first month – consumed as a shake or in recipes
- No KetoCal usage in the second month
- At 1 month, 24 (80%) children had >50% seizure reduction, of which 11 (37%) had >90% seizure reduction. There was no significant loss of efficacy during the second month after KetoCal was discontinued. The use of this ketogenic supplement increased daily fat intake and thus the ketogenic ratio (1.8:1 versus 1.0:1 in the modified Atkins diet alone, $P = 0.0002$)
- 14/30 patients chose to restart KetoCal at the end of the study (2 month period)

Diet Initiation



- Nutrition evaluation and diet teaching initiated in the outpatient setting with start of diet at home
- Typically 1 gram of fat per 1 gram of combined carbohydrate + protein (would probably calculate to a 1:1 to 2:1 ratio)
- Allowed carbohydrate:
 - 10-15 grams per day for children
 - 15-20 grams per day for adolescents/adults
- Food portions are estimated – no weighing required
- Focuses on limiting carbs and encouraging fats

Reading Labels for Carbohydrates



- Look at the serving size at the top of the food label (Ex: 1 potato)
- Look for **Total Carbohydrates in grams**, which is the amount for one serving size (Ex: 26 grams in 1 potato)
- Subtract **Dietary Fiber** from Total Carbohydrates for the MAD because Dietary Fiber is not absorbed
- If you see “*sugar alcohols*” listed, these must be counted because they may be absorbed
- 26g Total Carbohydrate – 3g Dietary Fiber = 23 grams Net Carbohydrate.

Nutrition Facts	
Serving Size 1 potato (148g/5.3oz)	
Amount Per Serving	
Calories 100	Calories from Fat 0
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Cholesterol 0mg	0%
Sodium 0mg	0%
Potassium 720mg	21%
Total Carbohydrate 26g	9%
Dietary Fiber 3g	12%
Sugars 3g	
Protein 4g	
Vitamin A 0% • Vitamin C 45%	
Calcium 2% • Iron 6%	
Thiamin 8% • Riboflavin 2%	
Niacin 8% • Vitamin B ₆ 10%	
Folate 6% • Phosphorous 6%	
Zinc 2% • Magnesium 6%	
*Percent Daily Values are based on a 2,000 calorie diet.	

Reading Labels



- Suggest start with frozen veggies and fruits since they have labels with serving sizes
- Can teach patients to look for higher fat content (75% lean vs 85% lean meats)
- Can suggest to those interested to use scale

Carb Counter Booklet



	Amount	Net Carbs
Pumpernickel, 100% Rye Meal	1 sl	16.5
Pumpernickel, Thin Sliced	1 sl	8.2
Raisin ¹	1 sl	12.5
Rye ¹	1 sl	12.1
Rye, 100%	1 sl	17.0
Sourdough ¹	1 sl	34.6
Sprouted Whole Wheat ²	1 sl	18.0
Sunflower Seed	1 sl	17.0
White ¹	1 sl	12.1
Whole Grain ¹	1 sl	9.3
100% Whole Grain ²	1 sl	9.0
Whole Wheat ¹	1 sl	9.8
100% Whole Wheat ²	1 sl	10.0

- Carb Counter handout from <http://www.atkins.com/Program/Carb-Counter.aspx>

Sugar Alcohols



- Sugar alcohols do not raise blood sugar but are metabolized. Therefore, they count towards daily carb goals.
- Beware of “Net Carbs” as the sugar alcohols may be subtracted from the total carb.
- Common sources are Erythritol, Xylitol and Sorbitol
- It may be possible to use these in very small amounts (example: in baking recipes which yield multiple servings and would then contain very little sugar alcohol)



Sample Meal Plan

Food	Serving	Grams of Carbohydrate
Breakfast: Sausage and Eggs		
Jimmy Dean® Original Sausage Patties	2 each	1
Eggs	2 large	1
Salted Butter	1 teaspoon	0
Lunch: Meat and Cheese Rollup		
Turkey Deli Meat	2 slices	1
Kraft Mayo	1 teaspoon	0
Kraft American Cheese	1 slice	1
Dinner: Cheeseburger		
Hamburger Meat (80% lean)	4 ounces	0
Tomato	¼ inch slice	1
Kraft Mayo	2 teaspoons	0
Kraft American Cheese	1 slice	1
Snack #1 Celery and Peanut Butter		
Celery	1 stalk	2
Smucker's® Natural Peanut Butter	1 teaspoon	1
Salted Butter	1 teaspoon	0
Snack # 2 Cream Soda		
Heavy Whipping Cream	1 ounce	1
Diet Soda	8 ounces	0
Total Carbohydrates		10 grams

Menus



BREAKFASTS

2 eggs- scrambled with butter and cream

2 sausage patties

LUNCH AND/OR DINNERS

Chicken Breast-grilled, with butter or Mayonnaise-Unlimited

1 Cup Steamed broccoli with olive oil (4.4)

2 tablespoons cheddar cheese (0.5)

Bacon- Unlimited

Pork Chops-unlimited

1 cup Cauliflower steamed (3.4) with 2 Tbsp. shredded cheddar cheese (0.5)

½ cup steamed spinach (1) cooked with butter or oil

SNACKS

1 slice deli turkey with 1 slice cheese, Mayonnaise

String cheese- whole milk (no skim or low fat)

Sugar-free gelatin topped with Heavy whipping cream sweetened with artificial sweetener

ADDITIONAL INSTRUCTIONS:

1. NO BREAD, PASTA, RICE, POTATO OR CORN
2. MEASURE FOODS
3. NO JUICE OR SWEETENED BEVERAGES

Breakfasts are 2 grams, Dinners and lunches are 4 to 5 grams and snacks are 1 to 2 grams carbs

GOAL_____GRAMS CARBOHYDRATE/DAY

Modified Ketogenic Diet



- Calculated at 1:1 or 2:1
- Fat is encouraged
- 1 fat serving = 1 Tbsp. = 14 grams fat
- Protein is counted in servings (1 oz. = 7 grams) and is limited to daily needs based on weight

Other MAD diets



- Some institutions count total carbs (vs. Net carbs subtracting fiber)
- Limiting daily counts to 40- 60 grams- Chicago (Robyn Blackford)
- Ease of teaching
- Helps patients avoid the issues of sugar alcohols and “Net Carb” labeling
- Carbs are cut by 10 grams weekly until pt. unable to restrict further or 40-60 grams

Modified Atkins using Exchange lists



- Unlimited protein
- High fat- Encourage fat with suggested servings
 - Ex: 1 Tbsp. butter, 2 Tbsp. mayo
- Uses exchange lists for carb control
- List provides portions of foods that contain 1 to 2 net carbs and patients have choice of 1 to 2 servings/meal based on daily carb goals

Exchange List Example



- Oils/Fats
 - 1 Tbsp. butter/oil with or used with meals
 - 2 Tbsp. low-carb salad dressing/mayo
- Protein
 - Meat/Poultry/Fish – 3 servings of 2-3 oz. minimum (or more if desired)
 - Cheese – 1 serving = 2 oz.
- Carb Exchanges – Choose 2 servings per meal
 - Strawberries or raspberries – $\frac{1}{4}$ cup
 - Peaches – $\frac{1}{4}$ small
 - Carrots – raw = $\frac{1}{2}$ medium
 - Cooked = $\frac{1}{4}$ cup steamed
 - Squash – yellow or zucchini – raw = $\frac{3}{4}$ cup
 - Yellow cooked = $\frac{1}{2}$ cup
 - Zucchini cooked = $\frac{3}{4}$ cup

Sharma et al. Evaluation of a simplified modified Atkins diet for use by parents with low levels of literacy in children with refractory epilepsy: A randomized controlled trial. *Epilepsy Research*. 127;2016:152-159



- Randomized controlled trial in India
- Children age 2 to 14Y, with IE on 2 meds, randomized to simplified modified Atkins diet group or control group
- Primary outcome: reduction in seizures
- Pts with >50 % reduction in seizures
56.1% diet group and 7.5% control group
- Pts with >90% seizure reduction
19.5% diet group and 2% control group

Sharma et al. Evaluation of a simplified modified Atkins diet for use by parents with low levels of literacy in children with refractory epilepsy: A randomized controlled trial. *Epilepsy Research*. 127;2016:152-159



Standard measures used to explain the amounts in recipes so weighing of food was not required

Sample recipes from the Parent Guideline Book – written recipes with pictures for families to use

सीमित मात्रा (बताई गई मात्रा) में दें

1. गाजर का हलवा-

सामग्री-

- गाजर (कटकुस किया हुआ) कटोरी नं. 3 (पूरी भरी हुई)



- सोया पाउडर 2-3 चम्मच
- शुगर फ्री पाउडर / गोतिरिया
- घी (कम-से-कम दो या तीन चम्मच)

बनाने की विधि-

- एक पैन में घी गर्म करें कटकुस की हुई गाजर को डालें और अच्छे से चलाएं।
- जब गाजर हल्का-सा भून जाए तो 2-3 चम्मच सोया पाउडर डालें और साथ में 1 चम्मच घी भी डालकर अच्छे से चलाएं।
- 2 मिनट के बाद इसमें 3-4 चम्मच नेचुरा पाउडर डालें और अच्छे से मिलाएं।
- 1-2 सेकंड फ्रकाने के बाद ठंडा होने पर परोसें।



A

2. घीया का हलवा-

सामग्री-

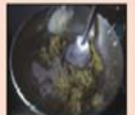
- घीया (कटकुस किया हुआ) कटोरी नं. 2 (पूरी भरी हुई)



- सोया पाउडर 3 चम्मच
- शुगर फ्री पाउडर / गोतिरिया
- घी (कम-से-कम दो या तीन चम्मच)

बनाने की विधि-

- एक पैन में घी गर्म करें। उसमें कटकुस किया हुआ घीया डालें और पकाएं।
- फकाने के बाद 3 चम्मच सोया पाउडर डालें और अच्छे से मिलाएं।
- 2 मिनट बाद 3-4 चम्मच नेचुरा पाउडर डालें और मिलाएं।
- 3-4 मिनट तक अच्छे से चलाकर पकाएं।
- ठंडा होने पर परोसें।



B

MODIFIED ATKINS DIET INITIAL ASSESSMENT

Background information



- How many seizures per day/week/month is the patient having? What do they look like? How long do they last?
- Any problems with weight (loss or gain?) Any GI issues (nausea, vomiting, diarrhea, or constipation)?
- Any other medical diagnoses? Note any history of reflux and/or kidney stones
- Medications – which ones? Liquid or pill?
- How much do you know about the ketogenic/modified Atkins Diet?

Starting the MAD



- Review patient info to determine best diet “fit” and/or physician request
- Dx., Tube-fed, picky eater, thickened liquids
- Literacy level, label reading ability
- Family support system, finances
- Sometimes a family may decide to do CKD

Diet Initiation - MD Prescribe Labs



- Baseline labs are the same as for the Classical ketogenic Diet
 - Comprehensive Metabolic Panel (CMP)
 - Complete Blood Count (CBC)
 - Carnitine (free and total)
 - Fasting Lipid Profile
 - Vitamin D 25-OH
 - Selenium
 - Urinalysis

Diet Instruction



- Explain the ketogenic and modified Atkins diets
 - Side effects
 - Risks of the diet(s)
- Encourage foods the patient is already consuming (based on the 24 hour recall) that will fit with the diet
- Provide handouts – carb counter, high fiber vegetables, menus, shopping list
- Review label reading
- Give menu examples using food recall

Carbohydrate Tracking Log



- Important to keep track of carbohydrate intake to determine effectiveness of diet
- Keep track of:
 - Time food consumed
 - Meal consumed
 - Total carbohydrate intake
 - Beverages consumed
- Use this in addition to seizure tracking log

Modified Atkins Diet - Therapy Diary

Seizure Description:

A. _____

B. _____

C. _____

D. _____

[illegible]

Medications



- Take all medications as prescribed
- Review all medication formulations. Can something be tolerated as a tablet? Is a liquid med excessive in carbs?
- Review recommendation that any additional medication added during diet therapy should be tablet or lowest carb formulation. Example: antibiotics, OTC

Monitoring



- Urine Ketones
 - Test after 3 days on diet
 - Test 2 times/week or additional as needed
- Weights
 - Weekly weights

Follow Up



- Follow up appointment 1 month after diet initiation
- Most common follow-up issue is incorporating more fat for better ketosis
- Email can make it easier to provide recipes or other handouts
- Ensure parents have a school letter to assist school/child care with the diet. Typically food provided from home

Additional Information



Patients and families go through 3 phases of initiating the Modified Atkins Diet:

- 1) Elimination of carbohydrate from the diet.
- 2) Incorporation of increased amounts of fat.
- 3) Fine tuning.

Johns Hopkins All Children's Hospital
Department of Neurology
Institute for Brain Protection Sciences
Outpatient Care Center, 5th Floor
601 5th Street South
St Petersburg, FL 33701
727-767-6161 T
727-767-2590 F



Date: August 3, 2017

To Whom It May Concern regarding -----

From: Stacey K Bessone RDN, LDN

----- is on a form of the Ketogenic Diet called Modified Atkins Diet. This is a very low sugar/carbohydrate diet that can help reduce/control seizures and other symptoms. A dietitian and physician at Johns Hopkins All Children's Hospital monitor the diet.

Since the diet is a medical therapy, we are asking you to help ----- stay on the diet. All his meals/snacks will be sent from home. The diet is very strict and does not include many types of foods especially sweets/high carbohydrate foods. This includes NO soda, cakes, cookies, juices and candy. His total daily intake for carbohydrate is closely monitored.

Please do not feed ----- any of these items and only give him items sent in from his parents. Something as innocent as a taste of frosting or candy can result in a medical problem.

If Joshua does receive something not allowed on the diet please inform his parents.

Thank you for your help with this special situation. If any additional questions arise, please contact me at (727) 767-2106.

Sincerely,

Stacey K. Bessone RD LDN
Ketogenic Dietitian
Johns Hopkins All Children's Hospital

S. Parrish Winesett MD

Troubleshooting



- Provide menus if menu planning is difficult
- Address eating out
- Re-enforce limiting protein intake if necessary

Troubleshooting



- If strict menus needed, consider 1:1 or 2:1 ratio (or modified ketogenic diet) and recipes from a ketogenic recipe source.
- If patient doing much better on MAD, visit possibility of patient being seizure free on CKD

Discontinuing MAD in Children



- Can increase carbs by 10 grams/day for 2 weeks until 60 grams/day
- Contact Neuro/RD if seizures increase
- Start making substitutions of protein for fat – For example – more chicken and less mayo
- After 2 weeks begin switching to regular meals 1 meal at a time (example carb controlled breakfast and lunch, and regular dinner)

Resources



Books

- “Dr. Atkins’ New Diet Revolution” – Atkins
- “The Ketogenic and Modified Atkins Diets. Treatments for Epilepsy and Other Disorders”
Kossoff et al

Smartphone Apps

- Calorie King™
- Lose it! (remember fiber needs to be subtracted)

*These are personal resources I use and not intended as endorsement of any website or product on these pages

Resources - Products



- Ketocal® (Nutricia)
 - Ketocal® 3:1 Powder (Unflavored)
 - Ketocal® 4:1 Powder (Vanilla Flavored)
 - Ketocal® 4:1 LQ Liquid (Flavored and Unflavored)
- RCF® (Abbott) – Ross Carbohydrate Free Formula - soy based carbohydrate free formula
 - Used in milk protein allergy
 - Used when carbohydrates must be very limited due to low caloric needs
- KetoVOLVE™ (Nutr-e-volution)
 - Mild flavored powder
- KetoVie™ 4:1 (Cambrooke)
 - Available in chocolate and vanilla flavors
 - Ready-to-feed liquid

Resources - Modular Products



- Microlipid[®] (Nestle) – safflower oil emulsion at 4.5 kcal/mL
- MCT Oil[®] (Nestle) – fractionated coconut oil at 7.7 kcal/mL
- Liquigen[®] (Nutricia) – MCT emulsion at 4.5 kcal/mL
- Betaquik[™] (Nestle) – MCT emulsion at 1.89 kcal/mL
- Carbzero[™] (Nestle) – LCT emulsion at 1.8 kcal/mL
- Retail Oils (Olive oil, coconut oil) – variable caloric density

Resources



Websites

- Atkins™ website
 - Carb Counter – <http://www.atkins.com/Program/Carb-Counter.aspx>
 - Sample Menu's - <http://www.atkins.com/Recipes.aspx>
- www.atkinsforseizures.com
- www.charlifoundation.org
- www.modifiedmom.com
- www.ruled.me/ for recipes/recipe ideas
- www.recipes.sparkpeople.com search fat bombs
- www.carleyeissmanfoundation.org
- www.ilae.org
- www.lowcarbmaven.com for recipes/recipe ideas
- www.ibreatheimhungry.com for recipes/recipe ideas
- www.netrition.com for purchase of low carb foods
- <https://groups.yahoo.com/neo/groups/atkins4seizures/info> (No longer an active group but archived information here)
- Pinterest – search low-carb snacks, low-carb meals, ketogenic meals, ketogenic diet

*These are personal resources I use and not intended as endorsement of any website or product on these pages

Hints on Eating Out



Eating at McDonald's® on Modified Atkins Diet.

McDonald's for Breakfast

Breakfast is served all day at McDonald's, so it's always an option. While the hotcakes, oatmeal and parfait are too carb-rich for your plan, you can modify some of the other choices to make a low-carb breakfast meal. For example, an Egg McMuffin® has 27 grams of net carbs, but without the muffin it only has 3 grams of net carbs. The Big Breakfast®, which comes with scrambled eggs, sausage, biscuit and hash browns, also makes a good option if you skip the biscuit and hash browns — the eggs and sausage have only 2 grams of net carbs. The Egg White Delight McMuffin® or Sausage Biscuit and Eggs, minus the muffin and biscuit, each have 2 grams of net carbs. Or you could get a sausage burrito and just eat the filling with a fork for 3 grams of net carbs. And you might consider a biscuit-less Steak, Egg and Cheese Biscuit, with 3 grams of net carbs.



McDonald's is a registered trademark of McDonald's USA, LLC and is not affiliated with Nutricia North America.
Burger King is a registered trademark of Burger King Corporation and is not affiliated with Nutricia North America.
Chick-fil-A is a registered trademark of Chick-fil-A, Inc. and is not affiliated with Nutricia North America.
Wendy's is a registered trademark of Wendy's International, LLC and is not affiliated with Nutricia North America.

Adapted from Livestrong website

Fat Bombs



Can be helpful in increasing fat and calorie intake

Peanut Butter Fat Bombs

Makes 30 (0.5 grams carb each/ 87 calories)

$\frac{3}{4}$ cup Coconut oil

$\frac{1}{2}$ cup butter

2 Tbsp. Natural Peanut Butter

3 Tbsp. unsweetened Cocoa Powder

2 Tbsp. Sugar free flavored syrup (ex. Chocolate)

Melt to a sauce pan on low. Divide into 30 portions and cool in molds or ice cube trays.

***Note: Total recipe provides 15 g carbohydrate and 2580 kcals. Can be divided by total number of servings made if you make less than 30 servings.*

Shopping Lists



Trader Joe's Low Carb Shopping List

Butter Lettuce mix

Living lettuce (for burgers/wraps)

Great organic spinach bags, mini avocados

Fresh broccoli or cauliflower rice

Hansen's diet ginger ale or diet root beer

Low Carb tortillas (4 grams net/45 calories)

Genoa Salami and Provolone meat and cheese pack

Applegate uncured ham and roasted turkey

Canadian bacon

Hollandaise sauce

They have great bacons, eggs, cheeses, Kerry gold butter and almond milk (unsweetened vanilla)

Organic Cauliflower rice in frozen section (better than fresh)



CASE STUDIES

Case Study 1



- 16 year old female – A.B.
- Dx: Intractable epilepsy – failed 4 medications
- No feeding difficulties – eats by mouth
- Developmentally delayed
- Slightly overweight
- Social:
 - In a special needs class
 - 1 younger brother

Diet Prescription



- Modified Atkins Diet – 15g carbohydrate/day
- Feeding Schedule:
- 3 meals daily (or divided as desired)
 - Meal times can be adjusted pending schedule
 - Encourage higher intake of fats and high-fiber vegetables (less sugar)
- Fluids – minimum 86 oz. fluid daily
- Multivitamin/mineral and Calcium/Vit D

Case Study 2



- 3 year old F, Lives in Ukraine, No access to center with CKD therapy
- Dx: Congenital Brain malformation, Sz – failed 4 medications
- No feeding difficulties except must be pureed – eats and drinks by mouth
- Developmentally delayed
- Underweight
- Social:
 - Lives with Mom
 - Good access to food

Diet Prescription



- Modified Atkins Diet – 12g carbohydrate/day
- Feeding Schedule:
- 3 meals daily (or divided as desired)
- Meals consist of:
 - Unlimited Protein
 - Higher fat intake (suggested servings)
 - 2 portions of carb/meal (each portion for exchange list is 2 grams = 4 grams/meal)
- Fluids – minimum 43 oz. fluid daily
- Multivitamin/mineral, Calcium/Vit D

Food List



Unlimited Foods

Oils (olive, canola, coconut, vegetable, others)

Butter (regular butter – salted or unsalted)

Mayonnaise

Cheese (all except store-bought shredded)

Meat

Poultry/Pork

Fish/Seafood

Eggs – up to 4/day

Beverages

Water

Unsweetened tea (or sweetened with Stevia)

Almond milk, unsweetened – 2 cups = 1 carb serving

Carbs – Choose 2 servings/meal – 3 times/day

Plums – $\frac{3}{4}$ medium or $\frac{1}{2}$ small

Strawberries – $\frac{1}{4}$ cup sliced

Raspberries – $\frac{3}{4}$ cup

Peaches – $\frac{1}{4}$ small

Banana – $\frac{1}{4}$ small (counts as both servings)

Salad – lettuces – Romaine, Bibb – 2 cups,
Iceberg – $\frac{3}{4}$ cup, mixed greens (Mesclun) 1 cup

Tomatoes – 1 small or 5 cherry

Cucumber – $\frac{1}{2}$ cup sliced

Spinach – raw – 4 cups, cooked – 1 $\frac{1}{2}$ cups

Carrots – raw – $\frac{1}{2}$ medium, cooked – $\frac{1}{4}$ cup steamed

Squash – yellow or zucchini – raw – $\frac{3}{4}$ cup,
cooked – yellow – $\frac{1}{2}$ cup, zucchini – $\frac{3}{4}$ cup

Summary



- The MAD diet can be very effective for patients with IE, especially those that would do better on a less strict form of the diet
- The MAD diet can be taught in several formats to increase effectiveness and compliance
- Handouts and shopping lists can be helpful to start patients on the diet

References



- Freeman JM, Kossoff EH, Rubenstein JE, Turner Z. *Ketogenic Diets Treatments for Epilepsy and Other Disorders*. 5th edition. Demos Medical Publishing, New York, 2011.
- Kossoff EH, Borsarge JL, Miranda MJ, Wiemer-Kruel A, Kang HC, Kim HD. Will seizure control improve by switching from the modified Atkins diet to the traditional ketogenic diet. *Epilepsia* 2010; 51: 2496-2499
- Kossoff EH, Krauss GL, McGrogan JR, Freeman JM. Efficacy of the Atkins Diet as Therapy for Intractable Epilepsy. *Neurology* 2003;61:1789-1791.
- Kossoff EH, Rowley H, Sinha SR, Vining EPG. A prospective study of the modified Atkins diet for intractable epilepsy in adults. *Epilepsia* 2008;49:316-319.
- Kossoff EH, Dorward JL. The Modified Atkins Diet. *Epilepsia* 2008;49(Supplement 8) 37-41.
- Kossoff EH, Zupec-Kania BA, Rho JM. Ketogenic Diets: An Update for Child Neurologists. *J Child Neurol*. 2009;24:979-988.
- Kossoff EH, et al. Prospective study of the modified atkins diet in combination with a ketogenic liquid supplement during the initial month. *J Child Neurol*. 2011;26:147-51.
- Sharma et al. Evaluation of a simplified modified Atkins diet for use by parents with low levels of literacy in children with refractory epilepsy: A randomized controlled trial. *Epilepsy Research*. 127;2016:152-159
- Sharma S, Jain P, Gulati S, et al. Use of the Modified Atkins Diet in Lennox Gastaut Syndrome. *J Child Neurol*. 2014
- Sharma S, Sankhyan N, Gulati S, et al. Use of the modified Atkins diet for the treatment of refractory childhood epilepsy; a randomized trial. *Epilepsia* 2013; 54: 481-6



**Viewers interested in obtaining a Certificate of Attendance
for 1 credit hour please visit:**

www.NutriciaLearningCenter.com

**and enter the event code found at the end of
the survey**

www.surveymonkey.com/r/BessoneMAD

**For question on this Webinar or Nutricia's products, please
email:**

NutritionServices@nutricia.com

or call:

1-800-365-7354