



# The Modified Atkins Diet: An Update



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## Disclosures

- Consultant for Nutricia North America as Keto Ambassador
- *None pose any conflict of interest for this presentation*

*The opinions reflected in this presentation are those of the speaker and independent of Nutricia North America*

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## Objectives



- 1 Summarize the literature and various types of the Modified Atkins Diet (MAD).
- 2 Determine an appropriate candidate to place on a MAD ketogenic diet.
- 3 Formulate an educational plan to instruct a family on the MAD.
- 4 Review a case study applying new knowledge from the MAD presentation.

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- 1 Summary of the literature and various types of the Modified Atkins Diet (MAD).

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## Modified Atkins Diet (MAD): Definition



The Modified Atkins Diet can be defined as an “Alternative diet option for the medical ketogenic diet (KD) or novel form of the KD”

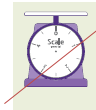


Similar to the classic KD (CKD) in that it is **high fat/low carbohydrate**.



**Less restrictive** – does not require weighing of foods.

Patients can use household measurements like cups and tablespoons.



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## First Studies and Results Using MAD



The Modified Atkins Diet (MAD) was created at Johns Hopkins Hospital in 2003

45%

of patients will respond to MAD with greater than 50% seizure reduction

Kossoff EH, Doward JL. The Modified Atkins Diet. *Epilepsia* 2008; 49 (Suppl 8): 37-41

- Some may still need the classical KD to achieve optimal results.

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

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## MAD with Lennox-Gastaut Syndrome patients



A trial of MAD in 25 patients with Lennox-Gastaut Syndrome performed in India showed at 12 months the following results:

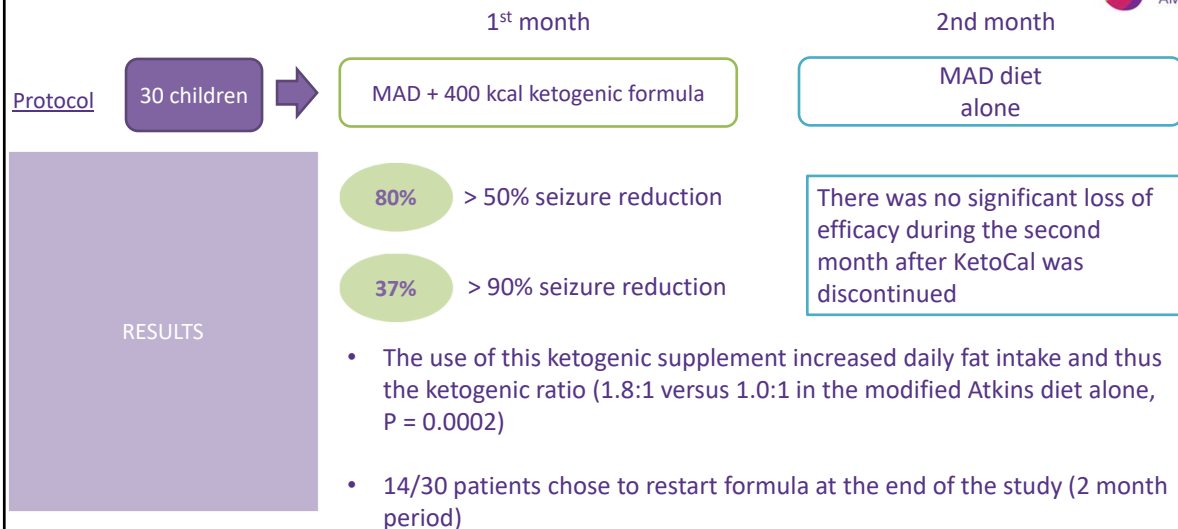


Sharma S, Jain P, Gulati S, et al. Use of the Modified Atkins Diet in Lennox Gastaut Syndrome. J Child Neurol. 2014.

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## MAD with Medical Ketogenic Formula



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.

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## Results of MAD with patients 2-14 years old



A randomized trial using MAD in addition to medical treatment versus medical treatment alone described patients aged 2-14 years who had failed 3 AED medications.

% of seizure frequency reduction of > 90%	Patient group
30%	Patients on MAD in addition to medication
7.7%	Patients on medications only

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

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## MAD with children 2-14 years old



- Randomized controlled trial in India
- Children age 2 to 14 years, 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

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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

**सोपित माता (बताई गई माता) में है**

**1. गाजर का हलवा-**

**सामग्री-**

- गाजर (कटुकर किया हुआ) कटोरी नं. 3 (पूरी पूरी हुई)
- सोया पाउडर 2-3 चम्मच
- शुगर फ्री पाउडर / मीठाई
- घी (कम-से-कम दो या तीन चम्मच)

**बनाने की विधि-**

- एक पैन में घी गर्म करें। कटुकर की हुई गाजर को डालें और अच्छे से चलाएं।
- उब गाजर हल्का-सा भून जाएं तो 2-3 चम्मच सोया पाउडर डालें और चलाएं। चम्मच की भी जानकारी अच्छे से मिलाने।
- 2 मिनट के बाद दूसरे 3-4 चम्मच नेचुरल पाउडर डालें और अच्छे से मिलाने।
- 1-2 सेकंड चम्मच के बाद ठंडा होने पर परोसें।

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**2. घीवा का हलवा-**

**सामग्री-**

- घीवा (कटुकर किया हुआ) कटोरी नं. 2 (पूरी पूरी हुई)
- सोया पाउडर 3 चम्मच
- शुगर फ्री पाउडर / मीठाई
- घी (कम-से-कम दो या तीन चम्मच)

**बनाने की विधि-**

- एक पैन में घी गर्म करें। उसमें कटुकर किया हुआ घीवा डालें और चलाएं।
- चम्मच के बाद 3 चम्मच सोया पाउडर डालें और अच्छे से मिलाने।
- 2 मिनट बाद 3-4 चम्मच नेचुरल पाउडर डालें और मिलाने।
- 3-4 मिनट तक अच्छे से चलाकर चलाएं।
- ठंडा होने पर परोसें।

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## Modified Ketogenic Diet



- Calculated at 1:1 or 2:1. Can use menus
- 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

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## 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

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## 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

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## 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 – ¼ cup
- Peaches – ¼ small
- Carrots – raw = ½ medium
- Cooked = ¼ cup steamed
- Squash – yellow or zucchini – raw = ¾ cup
- Yellow cooked = ½ cup
- Zucchini cooked = ¾ cup

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**Appropriate candidate** to place  
on a MAD ketogenic diet.

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## Starting the MAD

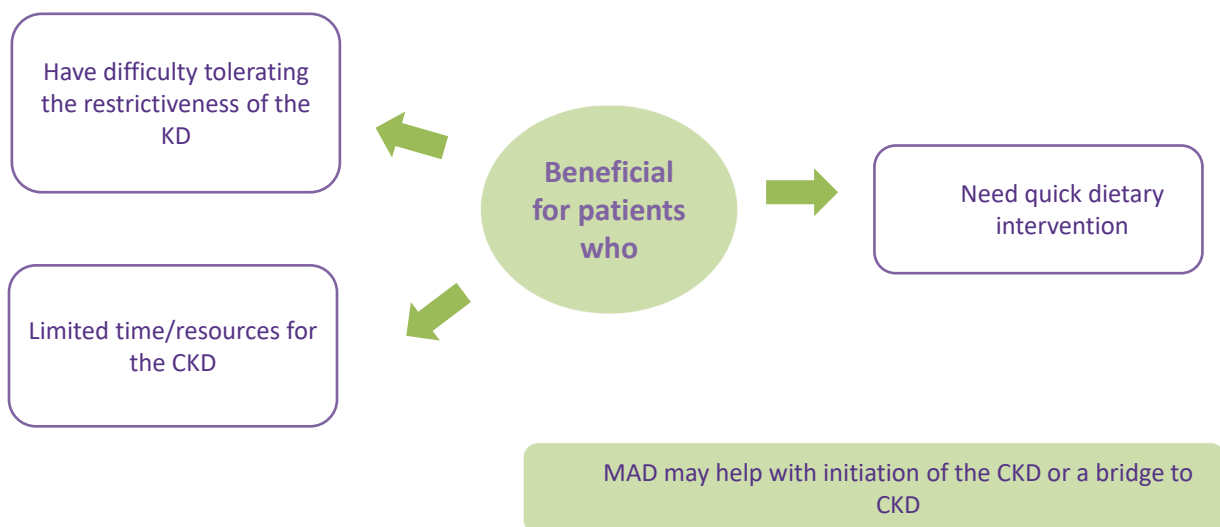


- Review patient info to determine best diet “fit” and/or physician request
- Dx., Tube-fed, picky eater, thickened liquids
- Literacy level, label reading ability
- Family support system, finances
- Sometimes a family may decide to do CKD

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## Examples of patients who might do better on MAD



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## 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
- Families that have carb counting knowledge



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## Choosing the Right Patient: situations where MAD may not be beneficial for the 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

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## 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?

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## Diet Initiation



Start with



Nutrition evaluation and diet teaching  
Initiate 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)

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## Carbohydrates

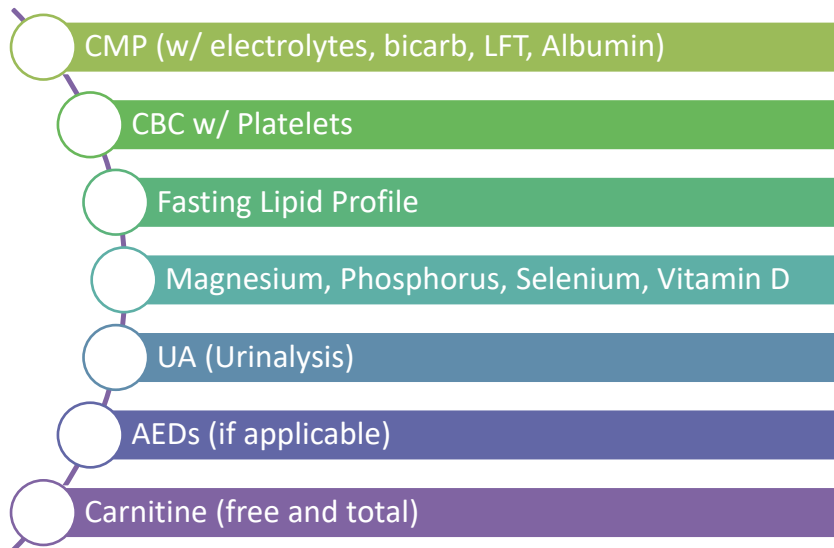


- Allowed carbohydrate:
  - 10-15 grams per day for children
  - 15-20 grams per day for adolescents/adults
- Food portions are estimated – no weighing required
- Focuses on limiting carbs and encouraging fats

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## What labs should be done baseline?



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Kossoff, et al. Epilepsia Open. 2018;3:175-92.

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## Education plan to instruct a family on the MAD

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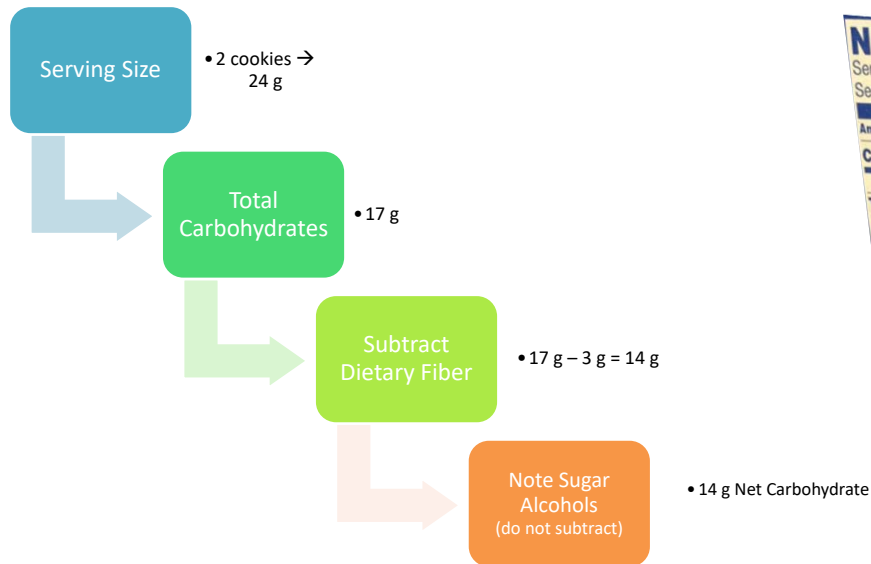
## Diet Instruction

- **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

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## 4 Steps to Label Reading for Carbohydrates



Nutrition Facts	
Serving Size 2 cookies (24g)	
Servings Per Container About 8	
Amount Per Serving	
Calories 90    Calories from Fat 45	
% Daily Value*	
Total Fat 5g	8%
Saturated Fat 1.5g	8%
Trans Fat 0g	
Polyunsaturated Fat 1g	
Monounsaturated Fat 2.5g	
Cholesterol 0mg	0%
Sodium 115mg	5%
Potassium 35mg	1%
Total Carbohydrate 17g	6%
Dietary Fiber 3g	12%
Sugars 0g	
Sugar Alcohol 8g	
Protein 1g	
Vitamin A 4%	Vitamin C 0%
Calcium 0%	Iron 0%

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## Teaching Label Reading

1. **Start with frozen veggies and fruits** since they have labels with serving sizes.
2. Teach patients to look for **higher fat content** (75% lean vs 85% lean meats).
3. If need be, families can **use a scale**.

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## Sugar Alcohols



- Count towards daily carb goals
- “Net Carbs”

Malitol

Sorbitol

Isomalt

Erythritol

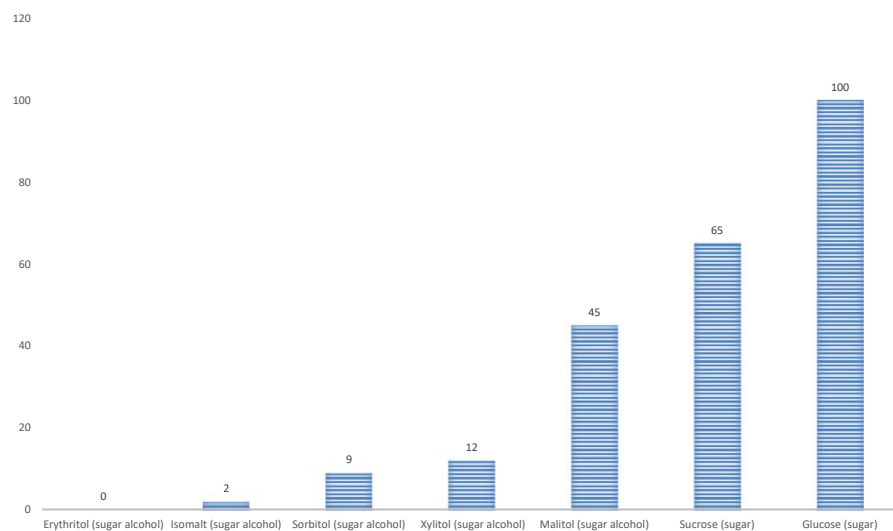
Xylitol

- May be possible to use these in very small amounts

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## Glycemic Indexes of Common Sugar Alcohols & Sugars



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# Schedule

	Food	Serving Size	Grams of Carbohydrate
Breakfast	Jimmy Dean® Original Sausage Patties Eggs Salted Butter	2 each 2 large 1 tablespoon	1 1 0
Lunch	<b>Meat and Cheese Rollup</b> Turkey Deli meat Kraft® Mayonnaise Kraft® American Cheese	2 slices 1 tablespoon 1 slice	1 0 1
Dinner	<b>Cheeseburger</b> Hamburger meat (80% lean) Tomato Kraft® Mayonnaise Kraft® American Cheese	4 ounces ¼ inch slice 1 to 2 tablespoons 1 slice	0 1 0 1
Snack #1	<b>Celery and Peanut Butter</b> Celery Smucker's® Natural Peanut Butter Salted Butter	1 stalk 1 teaspoon 2 teaspoons	2 1 0
Snack #2	<b>Cream Soda</b> Heavy Whipping Cream Diet Soda	1 ounce 8 ounces	1 0

Total = 10

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# Sample Menu

The logo for Nutricia Keto Ambassadors features a stylized figure with arms raised, composed of colorful vertical bars in shades of purple, blue, green, and yellow. To the right of the figure, the text "NUTRICIA KETO" is written in a bold, sans-serif font, with "KETO" in a larger, bolder font. Below "KETO", the word "AMBASSADORS" is written in a smaller, all-caps font.

## Breakfast

Eggs – scrambled with butter and cream  
Sausage Patties

## Lunch/ Dinner

Grilled chicken breast – with mayonnaise or butter – unlimited amounts  
1 cup Broccoli – Steamed with olive oil (4.4 g carbs)  
2 Tablespoons Cheddar cheese (0.5 g carbs)  
Unlimited Bacon

Grilled Pork Chops - unlimited  
1 cup Steamed Cauliflower (3.4 carbs)  
2 Tablespoons shredded Cheddar cheese (0.5 g carbs)  
½ cup steamed Spinach – cooked with butter or oil (1 g carb)

## Snack #1

1 slice deli turkey with 1 slice cheese, mayonnaise

## Snack #2

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

## Snack #3

Sugar-free gelatin topped with Heavy whipping cream 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 carbohydrate  
Lunch/dinners are 4-5 grams and snacks are 1-2 grams carbs.

Goal \_\_\_\_ grams carbs/day

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## 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](http://www.atkinsforseizures.com)
- [www.charliefoundation.org](http://www.charliefoundation.org)
- [www.ruled.me/](http://www.ruled.me/) for recipes/recipe ideas
- [www.recipes.sparkpeople.com](http://www.recipes.sparkpeople.com) search fat bombs
- [www.carleyeissmanfoundation.org](http://www.carleyeissmanfoundation.org)
- [www.ilae.org](http://www.ilae.org) – International League Against Epilepsy
- [www.lowcarbmaven.com](http://www.lowcarbmaven.com) for recipes/recipe ideas
- [www.ibreatheimhungry.com](http://www.ibreatheimhungry.com) for recipes/recipe ideas
- [www.netrition.com](http://www.netrition.com) for purchase of low carb food
- Pinterest® – search low-carb snacks, low-carb meals, ketogenic meals, ketogenic diet

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## Resources



### Books

- *Dr. Atkins' New Diet Revolution*. Atkins R. HarpPeren; 1998.
- *Ketogenic Diet Therapies for Epilepsy and Other Conditions, Seventh Edition*. Kossoff EH, Turner, Z.; Cervenka, MC.; Henry-Barron, B. NY, NY: Springer Publishing; 2020.

### Smartphone Apps

- Calorie King
- Lose it!® (remember fiber needs to be subtracted)
- Carb Manager®
- Atkins®

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## Ketogenic Formulas



### KetoCal® (Nutricia North America)

- 2.5:1 LQ (Vanilla Flavored)
- 3:1 Powder (Unflavored)
- 4:1 Powder (Vanilla Flavored)
- 4:1 LQ (Flavored and Unflavored)

### RCF® (Abbott) – Ross Carbohydrate Free Formula

- Soy formula

### KetoVie® (Ajinomoto Cambrooke)

- 3:1 (Unflavored)
- 4:1 (Chocolate, vanilla, unflavored)
- 4:1 Peptide

### Keto Peptide (Functional Formularies)

- 2.47:1 (Blended formula)

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## Modular Products



### Lipid

- Microlipid® (Nestlé) – safflower oil emulsion at 4.5 kcal/mL
- MCT Oil® (Nestlé) – fractionated coconut oil at 7.7 kcal/mL
- Liquigen® (Nutricia) – MCT emulsion at 4.5 kcal/mL
- Retail Oils (Olive oil, coconut oil) – variable caloric density

### Carbohydrate

- Solcarb powder (Solace) – carbohydrate powder – maltodextrin - 3.75 kcal/g
- Polycal™ powder (Nutricia) – carbohydrate powder – maltodextrin – 3.84 kcal/g

### Protein

- Beneprotein® (Nestlé) – whey protein powder – 6 gm protein in 7 gm powder
- Complete Amino Acid Mix (Nutricia) – 100% amino acid powder – 8.2 g protein in 10 g powder

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## 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 in a saucepan 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.

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## Shopping Lists – Trader Joe's®



- Butter Lettuce mix
- Living lettuce (for burger/wraps)
- Great organic spinach bags
- Mini avocados
- Fresh broccoli
- Cauliflower rice
- Hansen's® Diet Ginger Ale or Diet Root Beer
- Low Carb tortillas (4 grams net carb/45 calories)
- Genoa salami and provolone meat and cheese pack
- Applegate® uncured ham and roasted turkey
- Canadian bacon
- Hollandaise sauce
- Organic cauliflower rice (frozen)
- Kerrygold® butter
- Unsweetened vanilla almond milk
- Bacon
- Eggs
- Cheese



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## Hints on Eating Out



- Fast Food
  - Salad (limit carrots/tomatoes), ranch or Cesar dressing
  - Grilled Chicken sandwich with cheese, bacon and ranch
  - Hamburger with cheese, no bun, Mayo
- Dine-in Restaurants
  - Steak with butter, broccoli with butter
  - Meat/chicken or pork with green beans
  - Grilled chicken Cesar salad with no croutons
- Most fast food and dine in restaurant chains have online nutrition facts.
- Patient should pick 2 meal options before they go out to eat

	Serving size (g)	Calories	Calories from fat	Total fat (g)	Saturated fat (g)	Trans fat (g)	Chol (mg)	Sodium (mg)	Total Carb (g)
Hamburger	100	230	80	9	3	0	25	460	26
Cheeseburger	111	270	110	12	5	0.5	35	630	27
Double Hamburger	128	320	140	15	6	1	45	450	26
Double Cheeseburger	142	360	170	19	8	1	60	670	27
Extra Long Cheeseburger	214	590	300	33	12	1.5	75	1040	50
Bacon Cheeseburger	112	290	120	13	6	0.5	40	680	27
Bacon Double Cheeseburger	148	390	190	21	9	1	65	790	27



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## Sample letter



\_\_\_\_\_ is on a form of the ketogenic diet called the 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 of 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 carbohydrates 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 \_\_\_\_\_ 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, LD/N  
Ketogenic Dietitian  
Johns Hopkins All Children's Hospital

Cc: MD name

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## Monitoring



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



Weights: Weekly

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## 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 (in ounces/day)
- Use this in addition to seizure tracking log

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## Seizure Tracking Log



Seizure Description:

A: \_\_\_\_\_

B: \_\_\_\_\_

C: \_\_\_\_\_

D: \_\_\_\_\_

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
Date: Sz:	Date: Sz:	Date: Sz:	Date: Sz:	Date: Sz:	Date: Sz:	Date: Sz:	Weight:
Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Ketones:
Date: Sz:	Date: Sz:	Date: Sz:	Date: Sz:	Date: Sz:	Date: Sz:	Date: Sz:	Weight:
Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Ketones:
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Date: Sz:	Date: Sz:	Date: Sz:	Date: Sz:	Date: Sz:	Date: Sz:	Date: Sz:	Weight:
Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Carbs: Hrs Sleep    #up	Ketones:

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## 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

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## Follow Up



- Follow-up appointment → **1 month after diet initiation**
- Most common follow-up issue:  
**incorporating more fat for better ketosis**
- **Email** can make it easier to provide recipes or other handouts
- **School letter** → **Facilitates compliance with diet at school/childcare.**  
Typically, food is provided from home

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## 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.

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## Troubleshooting



- Provide menus if meal planning is difficult
- Address eating out
- Re-enforce limiting protein intake if necessary
- If strict menus needed, consider 1:1 or 2:1 ratio (or modified ketogenic diet) and recipes from a ketogenic recipe source.
- Consider adding MCT oil

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## Discontinuing MAD in Children



- Can increase carbs by 5 grams/day weekly
- Contact Neuro/RD if seizures increase
- Start making substitutions of protein for fat – For example – more chicken and less mayo
- After several weeks begin switching to regular meals 1 meal at a time (example carb-controlled breakfast and lunch, and regular dinner)

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**Review a case study** applying new knowledge from the MAD presentation.

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## Case Study 1



- 4-year-old male
- Dx: Intractable epilepsy, Doose Syndrome – failed 3 medications
- No feeding difficulties – eats by mouth
- Average weight
- Social:
  - Shy, Timid
  - 1 older brother
  - Mom nervous to do CKD

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## Diet Prescription




- Modified Atkins Diet – **10g carbohydrate/day**
- Feeding Schedule:
  - 4 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 46 oz. fluid daily
  - Flintstones™ Complete, Calcium Carbonate powder, Vitamin D Drops, ½ brazil nut

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## Diet Follow-Up



**Obstacles**

- Patient became picky
- Mom frustrated

**Plan**

- Tried CKD menus
- Patient would not eat menus

**Revised plan**

- Added MCT oil , 3 mLs 3 times/day


➡

Seizure free 6 months

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## 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

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## 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 fl. oz. fluid daily
  - Multivitamin/mineral, Calcium/Vit D

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## 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 leaf extract)  
 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

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## Summary



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

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## References

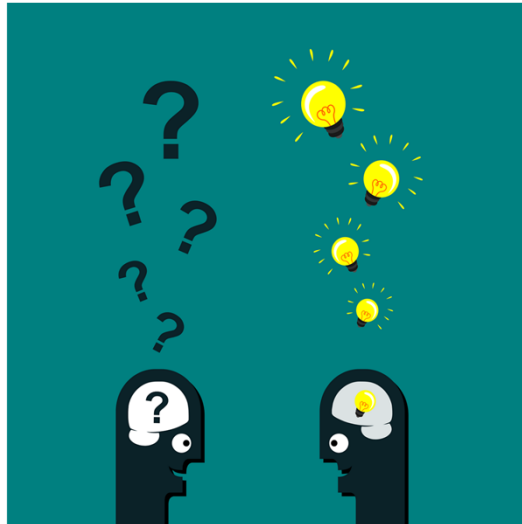


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## Questions?



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